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RS-88-2
May 1988

USSR

Agriculture and Trade Report

Situation and Outlook Series

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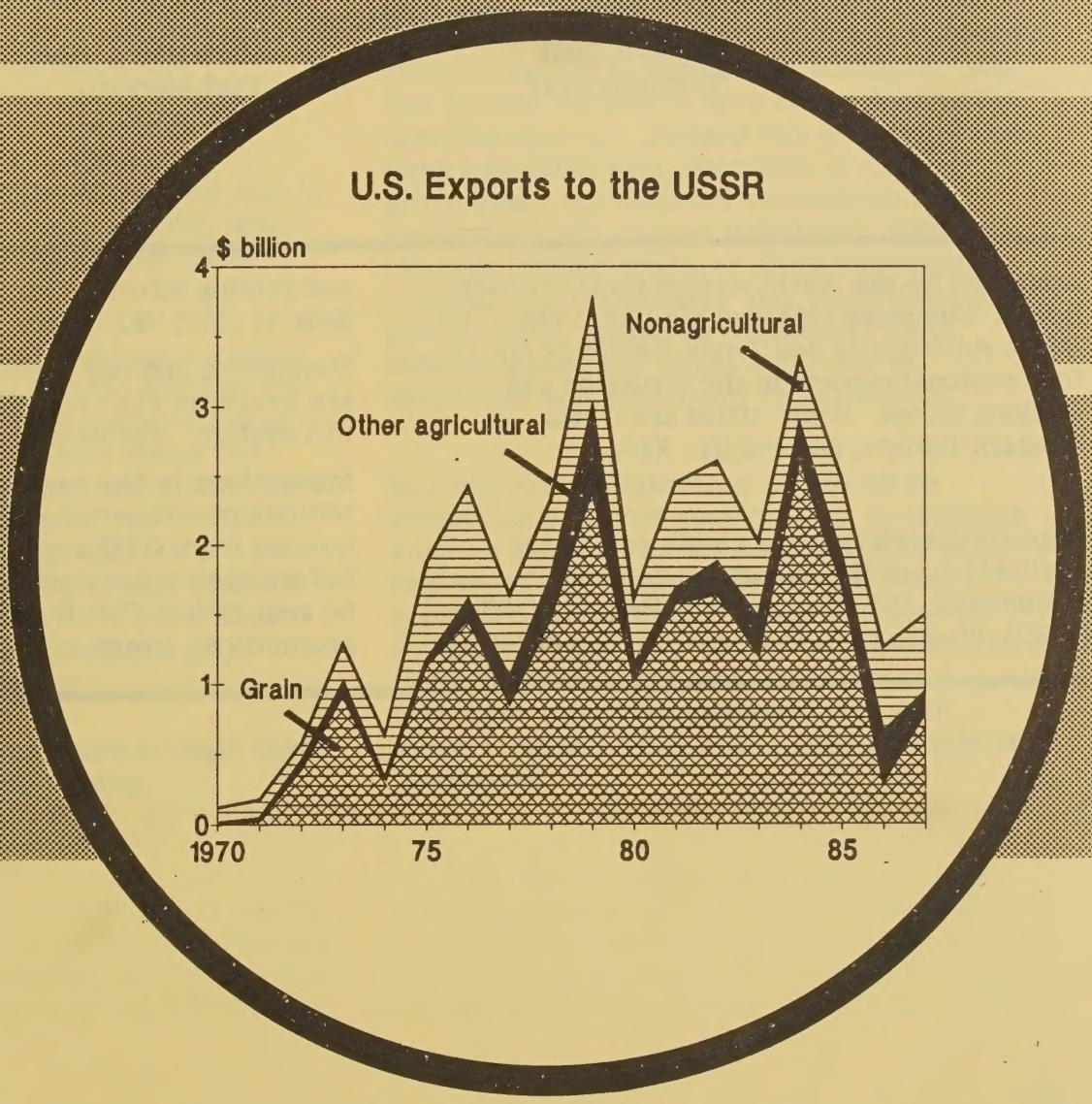

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Approved by the World Agricultural Outlook Board. Summary released May 23, 1988. The *USSR Agriculture and Trade Report* is one of four regional reports in the Situation and Outlook series. Other titles are *China*, *Western Europe*, and *Pacific Rim*.

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SUMMARY

U.S. agricultural exports to the USSR in calendar 1988 will rise faster than 1987's 43-percent increase to $938 million and should exceed $1.4 billion. Behind the gain will be much larger wheat shipments at higher prices and much bigger soybean and soybean meal sales. The rebound from 1986's 13-year low coincides with the shipment in 1987 and 1988 of 13 million tons of wheat to the USSR under the Export Enhancement Program. Negotiations for a third long-term grain agreement began with meetings in the spring of 1988.

The U.S. value share of Soviet grain imports may be above 30 percent for the first time since 1984 and over 8 percent of total agricultural imports. Grains and oilseeds have accounted for 95 percent of U.S. farm sales to the USSR since 1970.

Soviet agricultural imports this year may increase 5 percent from 1987's estimated $16 billion but will remain well below the $19-billion average of the first half of the 1980's. Grain imports now cost about $3 billion a year instead of $7 billion as in 1981-85. Despite a possible 20-percent rise in the unit value of grain imports in 1988, unit values will continue one-third lower than earlier this decade.

Soviet gross agricultural output managed to hold its ground in 1987 despite some of the worst weather in years. Grain production of about 211 million tons remained above the 200-million-ton level for a second consecutive year. Oilseed output increased for the third straight year and sugarbeets reached a 9-year high. In the livestock sector, animal product output increased, but at a slower pace than 1986. Meat production increased largely through inventory drawdowns.

Crops are off to a much better start than in 1987 following good fall sowing, overwintering, and spring planting conditions. Barring unusually severe weather through the spring and fall, 1988 crop output should increase. Expansion of livestock production may lag because of smaller inventories.

Increased production and productivity in agriculture are prerequisites for an improved Soviet economy. The agro-industrial complex accounts for more than 30 percent of the gross social product, 70 percent of the retail trade sales, and one-third of the productive capital and work force. More and better agricultural goods raise total economic performance and can spur further increases by providing consumer goods as incentives to workers.

Some Western analysts say that the Soviets have not pushed reform measures as forcefully in agriculture as other areas of the economy. However, according to General Secretary Mikhail Gorbachev, the "progressive transformation in agriculture continues" and the Soviets "intend to open every door to the agrarian sector." Toward this goal there has been a massive reorganization of the government bureaucracy responsible for agriculture and related industries. Other changes include producer price increases, contracts to tie workers' pay more closely to productivity, measures to increase farm independence, and added attention to agronomic and veterinary requirements.

In 1988, reform attention will focus on expanding producer cooperatives as separate entities in all sectors of the economy, and exerimentally as subdivisions within the massive Soviet farms. The government is supporting small to medium sized cooperatives and even individual labor activities to overcome the problems associated with inappropriately large scale, centrally planned production.

Growth in the Soviet economy slowed noticeably in 1987 as the strategy of squeezing slack out of the system, which had been fairly successful in 1986, faltered. Economic performance was hindered by severe winter weather early in the year, straining an already overburdened transportation network. The impact was particularly negative on industrial growth in the first quarter, repeating the experience of 1979, the last year with such severe winter conditions. Growth in the first half of the year was further constrained by the new system for implementing higher quality standards in Soviet industry. These were apparently relaxed by mid-year because of their disruptive influence on economic coordination.

Net material product (the Soviet national income measurement) increased 2.3 percent, compared with 4.1 percent in 1986. For the first time, the USSR reported growth in gross national product (GNP), which at 3.3 percent was higher than the material product growth because the GNP includes the faster growing service sector.

Performance in all the non-service sectors of the economy was down in 1987 from 1986. Agriculture was a major brake on the economy, with virtually no growth in 1987 compared to a 5.3-percent increase in gross output the year before. Complete data for transportation and construction are not available, but these sectors also appear to have grown more slowly in 1987. Gross industrial output increased by 3.8 percent last year, well short of the 5.3 percent increase registered in 1986 and the growth called for by General Secretary Mikhail Gorbachev's modernization effort.

The sector of industry most crucial to Gorbachev's economic reform is machine building, which grew just 4.6 percent last year, down from 7.4 percent in 1986. There is little evidence to suggest that the quality of output of the sector improved.

The economic slowdown underscores the fact that radical economic reform remains far from implemented. Soviet economists see 1988-90 as an interim period during which a coherent package of economic reforms should be put into place. However, Soviet economic growth in 1988 should recover somewhat from the relatively poor 1987 performance.

Shortage of Investment Resources

The growth strategy Gorbachev has mapped out for the economy is ambitious, calling for simultaneous increases in investment and consumption. The disappointing 1987 performance complicated that strategy. Growth in investment slowed from 8 percent in 1986 to 4.7 percent. Given the long list of priority investment tasks identified by Gorbachev, this rate is inadequate.

Virtually all sectors of the economy have serious claims on investment funds. Critical to the reform effort are a number of industrial sectors, particularly machine building, chemicals, and the energy and fuels complex. In addition, transportation, construction, and the service sector all need major improvement. One result of this pressure on investment resources is that food processing and agricultural input industries, also identified by Gorbachev as bottleneck areas, received virtually no increase in 1987. Serious delays continued in commissioning capital construction projects, particularly in machine building, metallurgy, and the chemicals and forestry complex.

Retail Markets Remain Tight

No improvement was made in 1987 in meeting demand for consumer goods and services. Behind rising demand was the continued growth of the Soviet money supply. State retail sales increased 2.8 percent, compared to a 3.4-percent rise in wages. The Soviets did not increase savings enough to absorb all the additional excess money.[1] Living standards may have improved slightly in 1987. The increase in retail sales, corrected for inflation, may have been as low as 1 percent, comparable to the growth in population. A large increase was registered in newly commissioned apartment space, up 8 percent from 1986. Social consumption spending (subsidies for health care, education, etc.) reportedly increased by nearly 5 percent.

Reform Tenets Explained

The Gorbachev strategy for economic reform took more definite shape last year. The June 1987 Plenum of the Central Committee of the Communist Party approved a new State enterprise law. A series of decrees were published which attempt to simplify and standardize the manner in which the Soviet economy operates. A greater role is slated for prices, profitability, cost accounting, credit, and other economic parameters in controlling and directing economic activity.

Administrative and planning organizations now are supposed to concentrate on setting medium-to long-term growth strategies and monitoring movements in major economic indicators. Enterprises are to have more autonomy in managing their affairs. Over time, the share of output covered by the State sales plan is supposed to decline leaving more options open to enterprises. Enterprises are expected to increasingly determine their own plans based on contract orders with other organizations or consumers. Managers will also have more freedom in allocating financial resources and more clearly defined rights in retaining profits.

Along with the new rights come greater responsibility. Financial and credit policies are to be tightened considerably. Enterprises no longer are to count on the State budget to bail them out of financial trouble. With declining State orders and increasing direct sales to product users, enterprises with poor quality output will presumably suffer.

Many big problems must be overcome for successful implementation of the reform, including defining the process of price formation and the role of prices under the reform system, establishing a fair reference point for enterprises as the reform starts, defining the role of regional and local administrative bodies, and developing the legal statutes consistent with the reforms.

Price Reform in the Works

Though many questions remain about the role of prices in the Gorbachev reforms, a price reform by 1991 is now fairly certain.[2] State subsidies to support low retail prices for food, particularly for livestock products, have increased in recent years. Retail prices recoup only about a third to a half of State expenditures for red meat and dairy production, processing, and distribution. In 1987, State subsidies for agricultural commodities were 60 billion rubles ($94 billion)--about 15 percent of the State budgetary expenditures. Meat and poultry accounted for about 50 percent of these subsidies and milk 33 percent.

Since 1984, State revenues generated by the agro-industrial complex (APK) to support such subsidies have declined because of rapidly declining sales of vodka, a major money-maker for the State budget. A large increase in retail prices could reduce the burden on the budget and excess demand for food, and simplify accounting arrangements in the procurement and food processing areas. Reform of wholesale prices will also be introduced. To this point, the bases for establishing the new prices remain unclear.

A major holdup concerns income compensation. Gorbachev has pledged full compensation as part of the retail price increases, but no decision has been made on its exact form. In some ways, the Soviets face the same dilemma Poland did in the early 1980's. Full compensation would maintain pressure on the State budget and soften the impact of higher prices on demand. Something less than full compensation may prove politically unpopular.

RENEWED AGRICULTURAL GROWTH IN 1988

Gross agricultural output in the USSR is likely to increase in 1988 by more than the mere 0.2 percent reported for 1987, but probably well below the 5.3 percent reported for 1986. Gross crop output, which reportedly fell 1.9 percent in 1987, could rebound modestly with higher grain, potato, cotton, and fruit output.[3] Expansion in the livestock sector slowed to 2 percent in 1987 and is expected to roughly maintain this growth in 1988. The Soviets reported that gross output of the APK as a whole increased by 1.8 percent in 1987, possibly reflecting the larger share of agricultural production sold to the

State and channeled through the State food processing sector. Growth in the food industry in 1987 also was bolstered by additional raw materials available from the large 1986 agricultural production.

Labor productivity in the socialized sector reportedly increased by 2.5 percent. However, the figure may have been inflated by counting output grown under contract on household plots. Average monthly wage payments on collective farms increased 2.5 percent. Data for State farms are not yet available. The increase in collective farm wages was smaller than in recent years and reflects financial restraint in the face of low productivity increases. The decline in capital productivity in agriculture, which had slowed significantly in 1986, once again gained speed in 1987.

Overall, financial performance in agriculture was down modestly last year. Profits in agriculture declined 1.6 billion rubles to 23 billion, and the number of unprofitable farms increased. Cost of production of most agricultural commodities increased. The inability to reduce unprofitable farms, despite numerous concessionary policies, will complicate economic reform in agriculture. Further rises in production costs make retail food price increases more and more imperative.

Investment in the Agro-Industrial Complex

Investment in the APK has not increased much in the last few years and its share of total Soviet investment has been slipping (figure 1). Priority is to shift in 1988 to food processing and handling, now slated for major increases in investment by 1995 (figure 2).[4] As an indication of the seriousness of this commitment, the defense industry is now responsible for producing food processing equipment, taking over for the recently disbanded Ministry of Machine Building for the Light and Food Industries. The quality of Soviet food processing equipment, generally, has not come close to Western standards.

Absolute investment in agriculture itself is not expected to increase in 1988. The Soviets feel that with 25 percent of all investment resources channeled to agriculture, enough is being done. In comparison with other industrialized countries, where

Figure 1

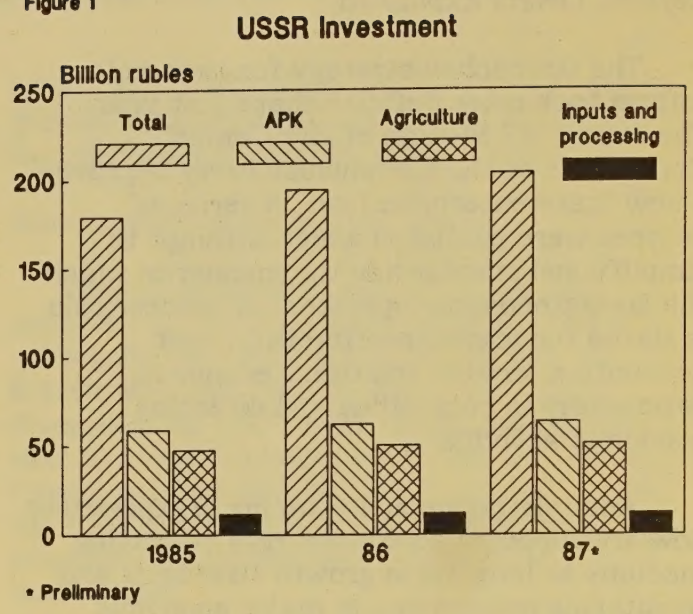
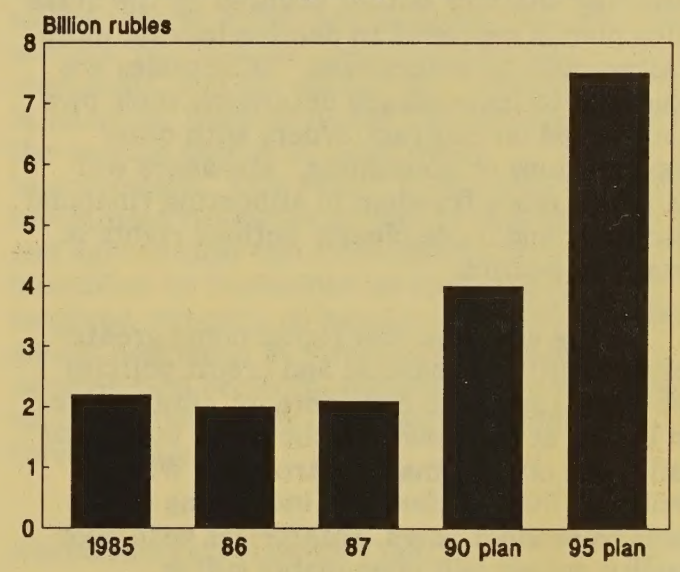


Figure 2



investment shares in agriculture are much lower, this is a point well taken. Large agricultural investments continue to go to areas which have provided low returns in the past, such as land improvement work. However, Soviet leadership has rejected the grandiose Siberian river division scheme. Commitment to develop agriculture in the Non-Black Soil Zone of the Russian Republic (RSFSR) was reaffirmed in early 1988.[5] Since the mid-1970's, large agricultural investment has gone into this area, with relatively meager results. In 1981-85, the area absorbed 18.3 percent of agricultural investment, while producing 14.7 percent of agricultural output, both shares unchanged from 1976-80. Without tighter control, either overall APK investment

Table 1--USSR crop area under intensive technology

Year	Grains 1/	Sugarbeets	Sunflowerseed	Potatoes	Other crops 2/	Total
			Million hectares			
1985	2/ 18.7	3/ 2.4	4/ 1.2	NA	NA	NA
1986	2/ 29.0	5/ 2.6	4/ 1.9	NA	NA	NA
1987	2/ 34.8	6/ 2.8	7/ 2.2	6/ 0.55	2.65	8/ 43.0
1988 plan	38.8	6/ 2.9	6/ 2.6	6/ 1.0	4.4	6/ 49.7
1990 plan	50.0	NA	NA	6/ 2.0	NA	9/ 60.0

1/ Includes corn for grain, barley, rice, pulses, etc. 2/ Estimate. 3/ Ekonomika sel'skogo khozyaistva, No. 9, 1986, p. 21. 4/ Maslichnye kul'tury, No. 1, 1987, p. 3. 5/ Sakharnaya promyshlennost', No. 11, 1987. 6/ Vestnik agroproma, No. 1, 1988, p. 3. 7/ Pravda, 7/19/1987. 8/ Ekonomika sel'skogo khozyaistva, No. 10, 1987, p. 87. 9/ Sel'skaya zhizn', 2/6/1986.

must increase or necessary funds will continue to be unavailable for improving the food industry.

Intensive Technology Expands

The intensive technology (IT) programs in crop and livestock production in the USSR remain a very high priority. These programs aim to improve efficiency by adhering to a system of modern agricultural principles.[6] In 1987, the area under IT reached 43 million hectares (table 1). Grain accounted for nearly 35 million hectares of the total, up from about 29 million the year before. Almost all of the increase in grain area under IT was accounted for by spring grains, which have not responded to the program as much as winter grains. Total IT area is planned at roughly 50 million hectares this year, of which 38.8 million will be in grain. *(Edward Cook)*

Coordination of Agricultural Input Supply

The ability of Soviet farms to implement the IT programs and reap the anticipated benefits depends in large part on the availability of quality inputs. Without a carefully selected array of agrochemicals and equipment, IT will not bring the projected result.

In 1987, the resources available to agriculture grew slowly, and the lack of agrochemicals was addressed largely by key imports. First steps were taken to provide badly needed improvement in the quality and the allocation of available resources. A major aspect of the March 1988 Fourth Collective Farm Congress was the complaints directed by farm representatives against the suppliers of inputs.

As Soviet farming has grown more complex and dependent upon off-farm inputs, the inadequacies of centralized planning the production and allocation of inputs has increasingly hindered agricultural production and efficiency. The system produces a perennial "sellers' market," with shortages, bad quality, limited assortment, and poor service and maintenance. These problems have not gone away despite the priority given to increasing supply during the Brezhnev era.

Goods produced through the traditional planning system fulfill State plans, but do not meet consumers' needs. Perestroika envisions that as obligatory State production quotas decline and firms contract directly with end users, they will learn to sell and be responsive to real needs. Both sellers and buyers will have to watch that the ruble goes further because under "self-financing" firms will have to be profitable; they are not to count on credit bailouts and the forgiving of loans. The bulk of the APK's production enterprises are already expected to operate without subsidy. All of them are to by the end of 1989.

While the mechanism to make input suppliers responsive to farms' needs is not complete, policies in place have already impacted farm demand. Farms are reportedly rejecting deliveries of poor-quality machinery and reducing orders for redundant and little-needed equipment. The January 24 plan fulfillment report, in fact, contained the unprecedented statement that farm machinery production plans were not met largely because of rejection for poor quality.

In 1988, the State intends to eliminate its subsidy to farm machinery and chemical

fertilizers, estimated in 1987 at 3.0 and 2.6 billion rubles, as well as raise prices of other materials which farms use.

Fully 25 percent of mechanical agricultural inputs are to be acquired in 1988 through direct unrationed, wholesale purchase. This percentage is to rise to 70 by 1990 and 80 by 1992. Still, it is far from assured that wholesale trade, the heart of economic perestroika, will meet this timetable. It faces immense difficulties, including creation of a degree of competition and a pricing structure which reflects the cost of production and demand factors.

If plans develop well, farm rejection of deliveries will eventually result in better quality and assortment of inputs. In the past, as farms accepted almost anything which could possibly be of use, central authorities had to ration supplies, often quite arbitrarily. Even without affecting supplies, less demand should improve the uses of inputs.

Machinery

Examples of unsatisfactory equipment models permeate the news. One farm's complaint typified the situation with the gigantic "Don 1500" combine. Of 18 that it had purchased, only 7 were operating and the rest had been stripped for parts. Bearings were bad, other parts too fragile and unfit for use.[7] The State Agro-Industrial Committee (Gosagroprom) officials stopped accepting the "Don 1500's" during 1987 because of lack of reapers and other attachments.[8]

The high-powered "K-700" and "K-701" tractors offer another example. Their operational weight is 13.5 tons, outfitted with loaded seeders, 25 tons. The Soviets estimate that soil packing due to the use of heavy wheeled machinery grew four times in the last 20 years, and lowered output by more than 20 percent.[9]

In March 1987, in the RSFSR alone, 100,000 tractors, 8,000 of the K-700 type, waited motionlessly for long periods for spare parts.[10] Hundreds of thousands of parts are delivered late and in broken sets, even to top priority IT operations. In 1986, about 20,000 combines stayed unrepaired. At one point during harvest in the Krasnodar region, a major agricultural area, half of the harvesting machines were stalled because of shortages of fuel, oil, and other lubricants.

Data on 1987 production and delivery of tractors, grain combines, and trucks, usually published in the January plan fulfillment report, were excluded this year (table 2). In 1988, agriculture is to receive 372,000 tractors, the fewest since 1983, but 321,000 trucks, the most ever. (The USSR has fewer farm trucks than the United States, but more tractors, many of which are used for transportation tasks.) As a result of declining deliveries, and as the new financial provisions encourage farms to remove obsolete, inoperable, or redundant equipment from their asset sheets, inventory growth has slowed.

Agrochemicals Limit Intensive Technology Application

Production of mineral fertilizers continued to increase, although certain long-standing problems were unresolved. Soviet domestic pesticide output remained a

Table 2--Tractors, grain combines, and trucks: Inventories, deliveries, and scrapping rates, USSR 1/

Year	Tractors			Grain combines			Trucks		
	Inventories	Deliveries	Scrapping rate 2/	Inventories	Deliveries	Scrapping rate 2/	Inventories	Deliveries	Scrapping rate 2/
	Thousands		Percent	Thousands		Percent	Thousands		Percent
1966-70 average	1,821	293	12.6	578	94	13.8	1,105	133	NA
1971-75 average	2,189	333	12.3	661	90	12.3	1,282	220	13.6
1976-80 average	2,495	361	12.9	701	108	14.3	1,527	268	15.4
1981-85 average	2,695	370	12.3	791	112	11.6	3/ 1,746	3/ 289	3/ 14.0
1986	2,776	394	14.2	827	111	13.5	1,917	317	13.6

NA = Not available. 1/ Inventories are for the end of the year. 2/ Equal to deliveries minus change in inventories divided by inventories at the end of the preceding year. 3/ Estimate.

critical bottleneck. The distribution and application of agrochemicals was a serious problem, not only lowering productivity but exacerbating environmental problems.

Soviet fertilizer production in 1987 was 5 percent above 1986 and 0.5 percent above plan (table 3). By 1987 the production of mineral fertilizer had increased 65 percent (in nutrient units) from the levels of 1975, and was approximately five times as large as in 1965. With 36.3 million tons, the USSR is now the world's largest producer of mineral fertilizer and a major exporter (figure 3). (The United States produced only 19.2 million tons in 1987.) The average fertilizer application rates had risen to 122 kilograms per hectare in 1987 from 118 kilograms in 1986, 77.5 kilograms in 1975, and a mere 28.4 kilograms in 1965 (table 4).

The quality of Soviet fertilizer available to farms has also risen of late. In 1986, 58 percent of fertilizer was granulated and 87 percent was compound and concentrated, versus 70 percent in 1975. The relative shortage of phosphates was addressed by a large increase in deliveries to farms in 1985 (15 percent) and in 1986 (10 percent). However, this increase occurred largely from imports, and was not sustainable (figure 4). The rate of increase of phosphate fertilizer returned to a level of 3 percent in 1987, about the average for the earlier decade.

Over 80 percent of Soviet plowland is poor in phosphates. Still, Soviet commentators note that only an average of 30 kilograms of phosphorus fertilizer is applied per hectare, whereas West European countries use two to three times that amount.[11] The

Figure 3

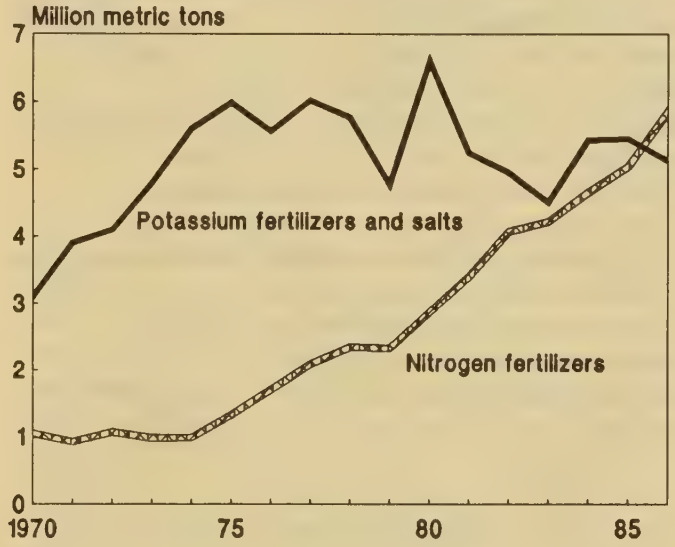


Table 3--Production and deliveries of mineral fertilizers to agriculture, USSR

Year	Total	Nitrogen	Phosphate	Ground phosphate rock	Potash	Trace elements
			1,000 metric tons 1/			
Production						
1966-70 average	10,379	4,210	2,030	955	3,177	7
1971-75 average	17,877	7,248	3,451	1,032	6,138	8
1976-80 average	23,328	9,283	5,300	828	7,910	7
1981-85 average	29,294	12,573	6,747	774	9,192	8
1986	34,737	15,200	8,540	788	10,200	9
1987	36,300	2/ 15,900	2/ 8,800	2/ 801	2/ 10,790	2/ 9
Deliveries						
1966-70 average	8,452	3,520	1,847	857	2,221	7
1971-75 average	13,802	6,209	2,978	904	3,703	8
1976-80 average	18,063	7,632	4,460	827	5,137	7
1981-85 average	22,156	9,790	5,766	774	5,817	9
1986	26,514	11,475	7,567	787	6,677	8
1987	27,400	2/ 11,875	2/ 7,820	2/ 797	2/ 6,900	2/ 8

1/ Nutrient weight basis. Nitrogen--20.5 percent N, phosphates--18.7 percent P2/05, ground phosphate rock--19 percent P2/05, potash--41.6 percent K2/0. 2/ Estimate.

USSR does not have a good natural endowment of phosphate ores of even average, let alone, high grade. Most phosphate ore is now coming from Kazakhstan's "Karatau" deposit whose facilities still lack sophisticated ore-enriching equipment.

Potassium fertilizer production apparently got back on track in 1987 after the closing of a key mine in the "Uralkalii" combine contributed to a 1.6-percent decline in 1986.

After encouraging industry to produce complex mixed fertilizers in the past, plans now call for production increases over the next few years to consist entirely of single-element fertilizers. This is due to the preference to custom mix fertilizer in the field for more exact specifications of IT.

Soviet publications continue to emphasize a number of problems. Liming is acknowledged to improve the efficiency of chemical fertilizers by 30 to 40 percent, yet the transportation, storage, and application of lime are very inadequate. Liming efforts over the past 12 years have reduced by only 4 percent the area needing applications, about 60 million hectares. In some regions of intensive use of mineral fertilizers, specifically the Ukraine, and the Central Black Soil Zone and Volga Valley regions of the RSFSR, the area needing liming has increased.

Soil humus is another continuing concern. Humus content in a number of regions has dropped greatly in the past few decades. On average, each hectare of arable land in the USSR received 4.5 tons of organic fertilizer in 1986 instead of the minimum of 7 tons needed to maintain the humus balance.

Soviet scientists maintain that better application, for example with less broadcast and more application at the root, could cut wastes and also increase the efficiency of fertilizers and reduce the need for more fertilizers. Still, others feel that there is not enough fertilizer for grains and for largely unimproved pastures and meadowlands.

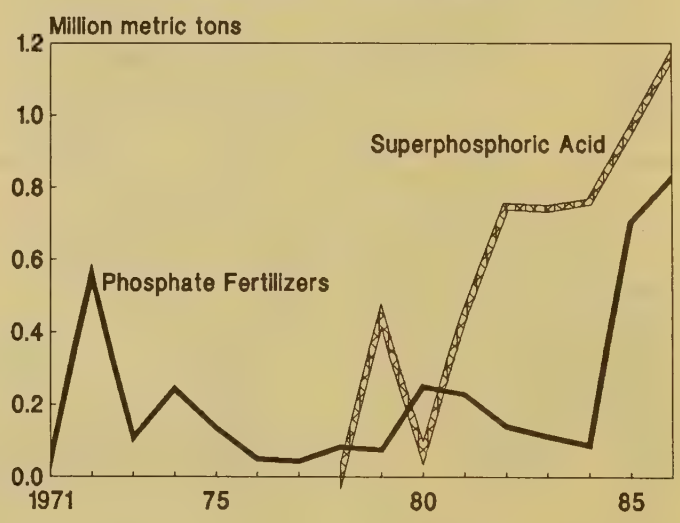
Table 4--Application of mineral fertilizer to selected crops, USSR 1/

Year	Grain excluding corn	Corn for grain	Cotton	Sugar-beets	Potatoes
Rate		Kilograms per hectare			
1975	42	155	391	399	280
1980	51	215	417	438	274
1985	72	200	376	455	293
1986	86	226	390	443	304
1987	89	209	410	419	284
Share fertilized			Percent		
1975	48	94	99	99	93
1980	57	95	94	99	93
1985	71	94	98	99	95
1986	73	97	99	99	95
1987	72	95	100	100	95

1/ Nutrient weight basis.
Source: Vestnik statistiki, various issues.

Figure 4

USSR Phosphate Fertilizer and Superphosphoric Acid Imports



The inadequate supply of chemicals and the means to store and apply them hamper modernization is evident in reports. Even the high-priority IT fields are not well supplied, "In accomplishing all tasks for increasing the productivity and stability of grain farming, the Ukraine counts on assistance on the part of the USSR Gosagroprom which has thus far been assigning absolutely insufficient equipment and chemical preparations even for the area under intensive technologies."[12]

Concern, even alarm, over environmental pollution and endangered food safety caused by agricultural chemicals has become increasingly evident with glasnost'. In some foods, chlorine and nitrate toxicity are problems, increasingly discussed as cancer risks.[13] These problems stem in part from the fact that not enough chlorine and nitrate-free fertilizers are produced. The press has castigated poor cultural habits in applying fertilizer and pesticides, including aerial sprayings in which half the plant protection material falls on the wrong field. Frequently, pesticides are applied more heavily than needed.

Commentators argue that providing agriculture with better trained personnel and equipment to optimize dosages of both fertilizer and pesticide could easily pay for itself and protect the environment. The new emphasis on profitability should help farms reduce abuse of the environment as they become more conscious of costs in excessive chemical applications.

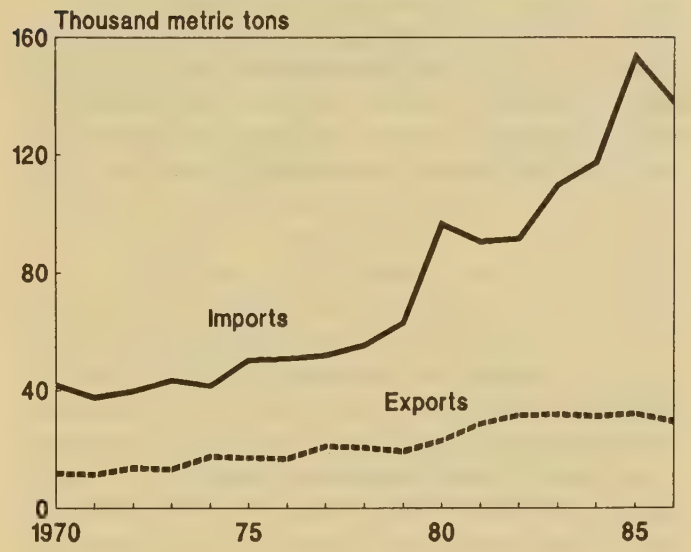
Chemical Pesticides
Most Crucial Bottleneck

The USSR has entered a new era where returns realistically expected from further fertilizer application are being debated. Gosagroprom official A. Zholobov says that in recent years the efficiency of fertilizers nationwide has been constantly declining because merely increasing fertilizer without improving its application has led to more weediness, the expansion of plant disease, and lodging of crops.[14] The unavailability of chemical pesticides is a very definite bottleneck.

Domestic capabilities to produce chemical pesticides are decidedly limited,

Figure 5

USSR Plant Protectant Trade



increasing reliance on imports (figure 5). A technical journal almost apologetically urged agriculturalists to consider a series of domestic products, including contact fungicides, seed treatments, 2-4-D type herbicides, and some other pesticides, because they are cheaper and more available. Soviet industry produces a very narrow range of chemical pesticides, compared with the West's approximately 500 individual pesticide preparations. The Soviet Union and other Council of Mutual Economic Assistance (CMEA) countries produce about 100. However, at least 150 types are needed.[15]

Soviet pesticide production in 1987 was 327,000 tons, 100 percent active ingredient basis. This approximately fulfilled plan, but represented a reduction in production for the second consecutive year. Plans have been lowered due to the discontinued production of several obsolete and dangerous products. For 1988, planned production has not been published, but deliveries to agriculture are to be 375,000 tons.

Soviet interest in producing modern agrochemicals in joint ventures with Western firms is high. The Soviets, for example, have contracts with Occidental Petroleum, Honeywell, and Monsanto to raise Soviet agrochemical supplies and production capabilities.

There is an additional complaint that expensive imported pesticides have not been

well utilized. A control commission reported that many of the variants made from them were of the wrong strength, and that many of the materials lay in warehouses so long that they became outdated. A well-functioning distribution system and an increase in farms' interest in economy are needed to get the most out of available agrochemicals.

Retrenchment on Land Improvement

Gorbachev did not even attend the Central Committee meeting which in October 1984 endorsed a plan to increase the areas of both irrigated and drained land by 50 percent by the year 2000.[16] By this program, it was hoped that the country could produce nearly half its farm products "regardless of weather fluctuations." Konstantin Chernenko was the principal supporter of continuing the reclamation program, which had cost 115 billion rubles since it was begun by Leonid Brezhnev. Within 5 months of the announcement of the new phase of the program, Chernenko was dead and Gorbachev was the new party general secretary. After that, as apparent in the 1986 decision to end planning of the diversion of Siberian rivers to the south, the goals of the "Long Term Program for Land Amelioration" have been steadily diluted.

Commissionings of newly irrigated and drained land decreased by 10 percent in 1987. In the plans for 1988, compared to 1986 there will be 18 percent less new land reclaimed, including 22 percent less newly irrigated land, and 14 percent less new drainage.

The increase in agricultural production from recent land reclamation has been much less than expected, and the cost much more. Specific problems involved poorly conceived projects, secondary salinization of soils, and a host of difficulties involving either shortages of complementary inputs (like proper fertilizers) or their poor application. Additionally, sprinklers and other irrigation equipment were often defective. Yields on only one-third of total irrigated lands have approached plan. The southern Ukraine and Volga Valley have the worst performance.

Table 5--USSR irrigated and drained land

Year	Irrigated		Drained	
	Year end	Commissioned	Year end	Commissioned
	Million hectares			
1970	11.1	.396	10.2	.815
1975	14.5	1.180	13.7	.982
1980	17.5	.650	16.9	.648
1981	18.0	.643	17.0	.696
1982	18.6	.637	17.5	.685
1983	19.1	.714	18.1	.728
1984	19.5	.676	18.6	.691
1985	20.0	.642	19.1	.693
1986	20.5	.629	19.5	.700

Consistent with a general intent to improve use of existing resources throughout the economy, current efforts are shifting to better maintenance and utilization of previously reclaimed lands. Deterioration of existing irrigation and drainage systems has worsened. For instance, during 1976-80 commissionings of newly irrigated land were 25 percent higher than the increase in total irrigated land. During 1981, commissionings were a third higher than the increase in irrigated land (table 5). Reconstruction work on over 1 million hectares takes place each year and is increasing. In 1988, the Soviets intend to reconstruct 3,200 kilometers of agricultural water lines serving 280,000 hectares.

There has been increasing discussion of instituting a water charge, potentially running from .75 to 2 kopecks (1 to 3 cents) per cubic meter of water. The intent would be to improve the utilization of water. According to Soviet estimates, in the Soviet Central Asian republics 50 percent of the irrigation water is wasted. *(Yuri Markish and Kenneth Gray)*

Agriculture has consistently been a weak link in the Soviet economy. The diverse operating conditions in a vast country and the constant uncertainty associated with weather make agriculture particularly ill-suited to the inflexible and highly centralized Soviet management system. A lack of appropriate or adequate incentives has also plagued Soviet agriculture and has resulted in little responsibility for poor performance and insufficient rewards for good performance.

Increases in input availability have been the traditional growth strategy in Soviet agriculture (the so-called extensive growth strategy). In the 1950's under Nikita Khrushchev, huge new areas were brought under cultivation east of the Volga. Later, under Brezhnev, a massive increase in agricultural investment greatly increased capital availability.

From an economic point of view, this extensive growth strategy has proved disappointing. Marginal returns to capital have been very low and capital productivity has declined swiftly. Increases in labor and land productivities have not been large enough to keep costs of production from increasing, particularly for livestock. Furthermore, the production increases that were achieved did not keep pace with growth in consumer demand.

The problem became most pronounced in 1975-82. During this period, per capita consumption failed to register much improvement, despite respectable increases in real income per capita. Because the State kept retail food prices from increasing adequately, retail shortages expanded. Reliance on agricultural imports grew substantially to alleviate the situation.

In the early 1980's, some policy adjustments were made to counter these negative trends. They focused on three primary areas: improving organizational arrangements in agriculture by creating regional agro-industrial organizations [RAPOs] and widespread implementation of the collective contract system of labor; achieving more balanced growth by putting investments on the worst bottlenecks; and encouraging greater integration of household plot agriculture with the socialized sector. The policy changes resulted in some improvement in agricultural performance, but proved less than fully satisfactory. The need for more thorough reform persisted.

Agriculture's role under the Gorbachev economic reforms remains uncertain. In most major pronouncements on reform, agriculture stayed in the background. Reform in agriculture is running a year or more behind implementation in industry. This may indicate a lack of conviction among policymakers about the prospects for agricultural reform.

The Logic of the Gorbachev Reforms

The current reform effort in the USSR attempts to simplify and standardize the rules by which the economy operates. How this will be accomplished remains undecided. Though the advantages of rational prices are recognized, no consensus exists on what constitutes them. Though Gorbachev wants less bureaucracy in agriculture (the number of obligatory directives sent to farms has been reduced, for example), important control functions apparently will be maintained by the administrative hierarchy.

Interference in farm affairs by planners is to be made less arbitrary by greater reliance on norms in determining sales targets, investment allocations, and the size of the wage fund. These norms are to be "scientifically based" and stable over long periods, possibly for an entire 5-year plan. Under the "resource norm system," a farm's performance and sales targets are judged in terms of the productive resources it has available. Likewise, increases in wage payments are to be tied directly to increases in labor productivity.

By the end of 1989, all farms are to be self-financing, meaning a drastic reduction in direct subsidies from the State budget and the elimination of credit leniency toward farms. Traditionally, finances have been tinkered with so as not to interfere with plan assignments. Farms that needed a financial bailout to continue operating virtually always got one. The lack of financial discipline made

it impossible to inculcate a sense of economic responsibility. The move to self-financing is seen as a necessary step toward real accountability. To this end, bonus payments to low-profit and unprofitable farms are being rescinded beginning in 1988 in favor of standardized regional bonus payments.

Banks are to operate on a new, more disciplined basis. A special agro-industrial bank has been created to serve farms. Credit is no longer to be extended to farms unless they take constructive steps to improve their operation. Continued credit leniency for problem farms has not been ruled out, however.

Possibly most important is the reform of the price structure. The current system of administered prices evolved over decades and needs reform. A major revision of prices, both wholesale and retail, is planned to be implemented by 1991. The basis for price formation does not appear to have changed. Though demand signals are supposed to play a greater role, the mechanism to achieve this is unclear. Most prices in agriculture will continue to be set administratively, based primarily on average costs of production. Prices for some goods will be allowed to fluctuate within upper and lower bounds, particularly for seasonal commodities, such as fresh fruit and vegetables. The prices for certain capital goods can be negotiated on a contract basis between producer and purchaser.

Planners hope to monitor and control developments through computerization of the Soviet agricultural economy. Linking all farms and other agro-industrial enterprises in an electronic network is viewed as a viable alternative to greater reliance on market prices. The computer network will be called upon to provide an adequate flow of economic information.

Farm autonomy is to increase through changes in the input distribution system. In the past, inputs were allocated administratively through the State supply network. Under the reform, farms are to have the right to contract directly with input producers or with wholesale trade organizations which are supposed to sell freely without rationing. The extent to which a shift to free contracting will be made is a topic of heated debate among Soviet planners and economists.

Similar changes are to be introduced for farm output. Traditionally, the State established sales targets for those commodities expected from each farm. These targets effectively constrained management autonomy on farms because virtually all a farm's cropland was required to satisfy them. Under the reform, State sales targets are to account for a decreasing share of farm output. This will leave more to be marketed through consumer cooperatives or locally on a contract basis to the State retail network. As a result, farms will have greater freedom in adjusting production patterns based on local needs and possibilities.

Some major initiatives underway since the early 1980's are developing under the current reforms. The rather rigid system of RAPOs in place since 1983 is under attack. Many Soviet agricultural specialists are calling for greater member control of these associations and experimentation with more truly voluntary and cooperative forms of integration. Interesting changes are also occurring in labor organization. Experiments with small labor teams of three to five members and household collectives of related individuals are being conducted with a clear eye to the success of similar arrangements in China. Similarly, some labor teams are being allowed to rent land for long periods (10-15 years) in hopes of creating a more proprietary attitude toward the land. The way may be cleared for more extensive rental arrangements or for differential land fees by the omission from the 1988 Model Collective Farm Charter of a long-standing technical provision that land is to be provided to farms free of charge.

The logic of the Soviet agricultural reform effort is that improved performance is not possible without an overall rationalization of the system. A set of clearly understood "rules of the game" will reduce the extent of arbitrary administrative interference in farm affairs and increase accountability. Those rules will simultaneously sharpen incentives and increase the flexibility of the system.

How is Reform Implementation Progressing?

In assessing the progress of reform implementation, a number of key points need to be considered. Though a broad consensus exists on the need for reform, one that

supports the rationale of standardization and simplification, there are widely differing views about the nuts-and-bolts specifics. The major point of difference is the way in which greater reliance on economic parameters is to mesh with a continued role for the administrative apparatus--including the "resource norm" system of planning. One school of thought views the reforms as primarily perfecting administrative approaches, with secondary and limited reliance on economic parameters. Other Soviet economists offer more radical interpretations of reform, which would severely curtail the role for the bureaucracy. Even the radical school falls well short of advocating true reliance on markets. There is disagreement and confusion about the method of price formation.

Second, the nature and scope of proposed changes are so broad, that in the best case, many years will be needed before they can be fully operational as a system. Nonetheless, some preliminary judgments are possible.

The overall impression is one of radical sounding ideas at the general level getting bogged down by inconsistencies and opposition at the detail level. A few critical areas include:

Price formation--Much of the potential improvement in allocative efficiency that a price reform could bring is likely to be missed in the USSR. The prices for the majority of agricultural commodities are likely to continue to be administratively set and adjusted infrequently. Some Soviet agricultural economists have argued for a shift to uniform, nationwide farm prices based on the highest marginal cost region. However, it now appears very likely that prices will continue to be set on the basis of average costs at the regional level. This means farm prices are low where costs of production are low, and vice versa. Such a system not only impedes rational resource allocation, but provides little incentive to control cost. Additionally, it is not clear how the prices of farm commodities and prices of off-farm inputs will better reflect demand factors.

Farm autonomy--There is little indication of a serious change in the relationship between farms and the administrative hierarchy. The nature of the traditional director-subordinate relationship continues to assert itself. The heavy reliance on norms under the reform leaves wide open the possibility of administrative interference in how farms operate. Especially if prices remain inadequate to direct farm activity, local authorities, who nominally remain responsible for farm performance, may be tempted to interfere administratively. It is too early to say whether any progress will be made in actually reducing the predominance of the State sales targets in a farm's operation.

RAPOs are being given larger discretionary authority over member farms as part of the greater reliance on norms. The RAPOs will divide investment resources and sales targets among member farms. Without greater member control of RAPOs, this too could seriously jeopardize farm autonomy.

Other threats to greater farm autonomy exist. Farms are supposed to have more options in marketing their output, but the necessary infrastructure and incentives to make use of new marketing channels still do not exist. Because the serious shortage of quality inputs continues and competition among input producers is limited, the system of contracting for inputs is in danger of becoming a formality.[17]

Cost accounting/self financing--The potential advantages here are limited by continued problems in price formation, farm autonomy, and input availability. Will farms have the degree of independence to be considered truly responsible for their performance? Will the method of price formation allow for improved resource utilization and consumer satisfaction? Will successful farms have a greater claim on investment resources? Most likely, farms will not have the freedom to be true profit-maximizers and will continue to dodge responsibility for performance. Budgetary pressures have created a need for new ideas to deal with chronically unprofitable farms. One idea calls for industrial enterprises to take them over and use them to supply workplace cafeterias. Concern for the budget creates pressure for truly independent collective contract teams in which remuneration is not guaranteed by the State but really depends upon performance. Still, credit loopholes and

direct transfers for problem farms are likely to continue to be significant.

Labor organization--Although a reported 76 percent of farm workers worked under collective contracts in 1987, many of these contracts existed in name only. Often these groups were not really free to make decisions and the method of their remuneration had not really changed. Also, Soviet specialists now generally realize that the typical size of a labor team in agriculture--upwards of 30 people--is too large to improve the ties between an individual's productivity and his or her pay. New emphasis is being placed on much smaller "intensive labor collectives" (KIT) and on labor brigades organized on a household basis. Previous attempts to introduce small labor collectives were overturned because of the fear of a large increase in income differentials and the potential negative consequences for traditional socialized agriculture should the small brigades prove successful. Can such organizations peacefully coexist with traditional socialized agriculture? Can individuals expect to be able to get rich if they work effectively? Despite the clear potential for productivity increases from small, independent collectives, opposition to them has kept implementation narrow.

Continued Obstacles to Reform

The next 3 years will prove critical for the Gorbachev reform effort. During this period, the price reform is to be unveiled and the system of farm self-financing, contracting, and new credit arrangements will be tested. Presumably, the role of the intermediary levels of the administrative hierarchy will also be clarified by 1991. Given the problems in critical areas described above, there is serious reason to doubt that the effort to reform planning, organization, and management will seriously improve incentives flexibility, and efficiency.

Many obstacles must be overcome if the reforms are to prove successful. First, and most readily apparent, is the unwillingness of the administrative apparatus to surrender what it considers critical areas of authority. Open disagreement about the direction of reform has already surfaced because of this.

Second, the State must accept the economic results of a reformed agricultural sector as equitable. In recent decades, the State has used differentiated prices, loose credit, resource rationing, and other means to correct what it considered unacceptable economic results. Poorly performing farms were essentially guaranteed the right to continue operation and in many cases successful farms had "excess" profits arbitrarily siphoned off by the State. Unless the State avoids extensive tinkering, serious economic reform will not be sustained. This raises the larger question of the State's role in counteracting unfair operating conditions. The rationale established under Brezhnev is that farms are not responsible for "objective factors," i.e. those beyond the farm's control. One problem has been how to distinguish an objective factor from a non-objective one.

It will be impossible to assure a fair starting point for the reforms for all farms. Many farms are entering the era of self-financing with tremendous debt burdens incurred under the system of administrative direction. How is this burden to be dealt with under the reform? If the debts are written off, this sets a bad example for the goal of financial discipline. If they are not, many farms have little prospect of surviving under true self-financing. An inadequate method of price formation will also increase the urge to correct financial results on the grounds of fairness.

A third source of opposition to reform is the fear of short to mid-term dislocations. The stability of the Soviet economic system stems in large part from the practice of planning from achieved levels of production. Reforms are being viewed by some as risking uncertainty in the production pattern and in State supplies of important agricultural commodities. Such fears may seem inappropriate given the wide variability in, say, Soviet grain production under the traditional system of management. Nonetheless, the willingness to accept potential dislocations early on is essential for the reforms to have a chance to succeed.

The economic reform movement in agriculture cannot be equated with the more

thorough reform of Chinese agriculture in the late 1970's. The Soviet reforms are more complex, but less ambitious, and contain serious internal inconsistencies. Though agreement exists in the USSR on the need for change in the planning and management of agriculture, that consensus breaks down very quickly after moving beyond generalities. At this point, the prospects for realizing the more radical interpretations of reform are seriously in doubt. *(Edward Cook)*

Grain Production Getting Back on Track?

The USSR may well have a record-setting third consecutive harvest over 200 million tons in 1988 and surpass both the 1986 and 1987 harvests of 210 and 211 million tons (figure 6). However, it is unlikely to reach the 235-million-ton target, up 2 million from the 1987 goal missed by 21 million tons. The optimistic 1988 goal fits with their longer term targets for output of 250-55 million tons by 1990 and 260-80 million by 1995. The Soviets are counting on management reforms and the expansion of IT to boost production. Intensive technology practices are to be applied to about 38.8 million hectares of grain in 1988, up about 10 percent from 1987.

Prospects for the 1988 winter grains appear brighter than last year. The 1988 crop was sown on an estimated 32.5 million hectares, despite a reported 1-million-hectare shortfall in winter wheat seeding plans. Intensive technology on winter grains encompassed a reported 17.2 million hectares, nearly 1 million below plan, but 4 million above 1987 (figure 7). The 1987/88 winterkill of grains was below the average 17-18 percent, although losses likely exceeded the previous low of 10 percent in 1982. Conditions in the autumn of 1987 were far more favorable for the emergence and establishment of crops prior to entering dormancy. Winter grains also benefited from near to above average temperatures this winter in contrast to the extended periods of severe cold and extreme fluctuations last winter. Furthermore, snowcover was adequate to protect crops from significant winterkill in most areas, and moisture supplies in fall 1987 were well above the previous year.

A concern in the New Lands this spring was the lack of high-quality seeding materials for spring grains. The quality of seed stocks was particularly poor in the areas with harvesting problems last year-- the Urals and Volga Valley regions, northern Kazakhstan, West Siberia, and the Non-Black Soil Zone.

The USDA estimated in May 1988 that spring grain area would total about 88 million hectares. Soviet plans called for IT to encompass 21.6 million hectares of spring grains, about the same as in 1987.

Figure 6

USSR Grain Production

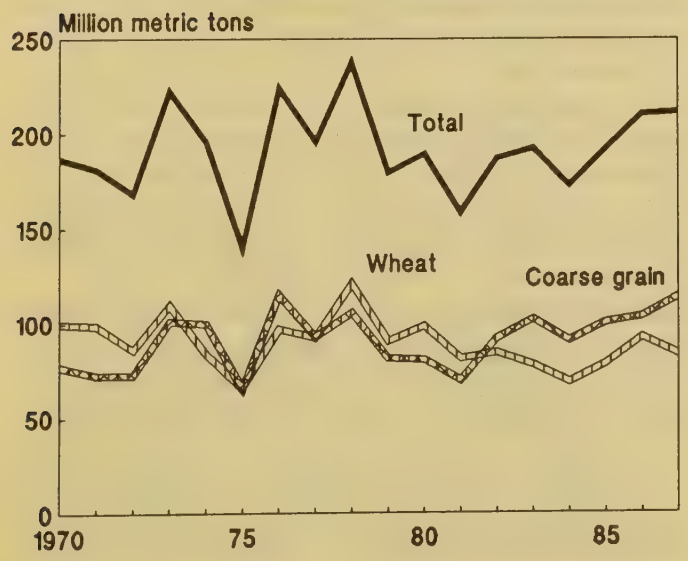


Figure 7

USSR Grain Under Intensive Technology

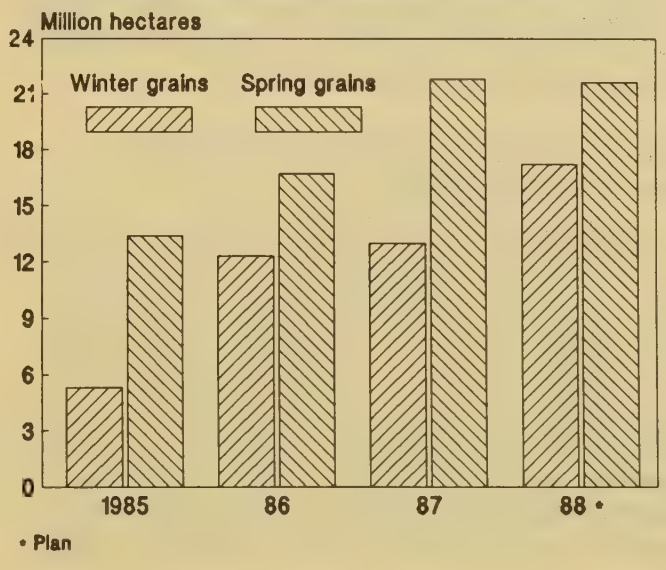


Table 6--Area, yield, and production of grain, USSR 1/

Year	Wheat 2/ Winter	Wheat 2/ Spring	Wheat 2/ Total	Rye	Barley	Oats	Corn	Other 3/	Total grain
				1,000 hectares					
Area									
1966-70 average	18,280	48,894	67,174	11,505	20,331	8,680	3,517	10,876	122,083
1971-75 average	18,443	43,025	61,468	8,500	28,370	11,310	3,596	10,743	123,987
1976-80 average	20,471	40,240	60,711	7,714	34,011	12,080	2,969	10,421	127,905
1981-85 average	18,709	35,023	53,732	9,331	30,530	12,352	4,000	11,441	121,386
1986	16,632	32,096	48,728	8,741	29,964	13,173	4,223	11,648	116,477
1987	15,319	31,365	46,684	9,725	30,654	11,790	4,573	11,786	115,212
1988 4/	17,000	31,500	48,500	9,500	29,900	12,000	4,600	11,500	116,000
				Metric tons per hectare					
Yield 1/									
1966-70 average	1.96	1.11	1.34	1.12	1.50	1.38	2.72	1.16	1.37
1971-75 average	2.26	1.10	1.45	1.35	1.53	1.31	2.84	1.19	1.46
1976-80 average	2.48	1.22	1.64	1.41	1.62	1.42	3.22	1.21	1.60
1981-85 average	2.28	1.01	1.45	1.53	1.42	1.42	3.27	1.22	1.49
1986	2.80	1.43	1.89	1.76	1.80	1.66	2.95	1.22	1.80
1987	3.02	1.18	1.78	1.86	1.91	1.57	3.23	1.55	1.83
1988 4/	3.03	1.29	1.90	1.84	1.82	1.58	3.26	1.48	1.85
				1,000 metric tons					
Production									
1966-70 average	35,888	54,304	90,192	12,834	30,454	11,938	9,558	12,585	167,561
1971-75 average	41,590	47,345	88,935	11,493	43,289	14,812	10,215	12,810	181,554
1976-80 average	50,725	48,948	99,673	10,880	55,150	17,161	9,568	12,595	205,027
1981-85 average	42,726	35,204	77,930	14,280	43,480	17,540	13,080	14,001	180,311
1986	46,528	45,778	92,306	15,248	53,889	21,929	12,479	14,217	210,068
1987	46,237	37,075	83,312	18,055	58,409	18,495	14,808	18,286	211,365
1988 4/	51,500	40,500	92,000	17,500	54,500	19,000	15,000	17,000	215,000

1/ Some figures may not add or calculate because of rounding. 2/ Production data for winter wheat and spring wheat derived from official area and yield data for 1981-85. 3/ Includes millet, buckwheat, rice, pulses, and miscellaneous grains. 4/ USDA May 1988 forecast.

The USDA May 1988 production estimate was 215 million tons from 116 million hectares (table 6). The estimated total yield was 1.85 tons per hectare, matching the 1978 record yield. Wheat production was estimated at 92 million tons, up 10 percent from 1987. Output of coarse grains was forecast at 109 million tons, down 4 percent from 1987.

Record Large 1987 Coarse Grain Yield, Wheat Output Down

Soviet grain production in 1987 totalled a reported 211.4 million tons (bunkerweight), less than 1 percent above 1986, but the first time two consecutive crops over 200 million tons were harvested. The national yield averaged 1.83 tons per hectare, second only to the record 1.85 tons in 1978 and back near the 1960-80 trend (figure 8). Declining for the seventh successive year, total grain area was 115.2 million hectares, the fewest in 27 years. A record roughage area and increased industrial crop area combined with winterkill accounted for the drop. The crop is noteworthy because it did as well as it did given the less than ideal weather. The adverse conditions, however, were reflected in the reduced quality of the grain.

Grain production on the Republic level was mixed in 1987 (table 7). While the Ukraine had the second largest grain crop ever, up 17 percent from 1986, output in the RSFSR and Kazakhstan decreased by 8 percent and 3 percent. As a result of the above average moisture content and lower quality of much of the grain harvested in the two Republics, production on a standard weight basis was likely down more than indicated.

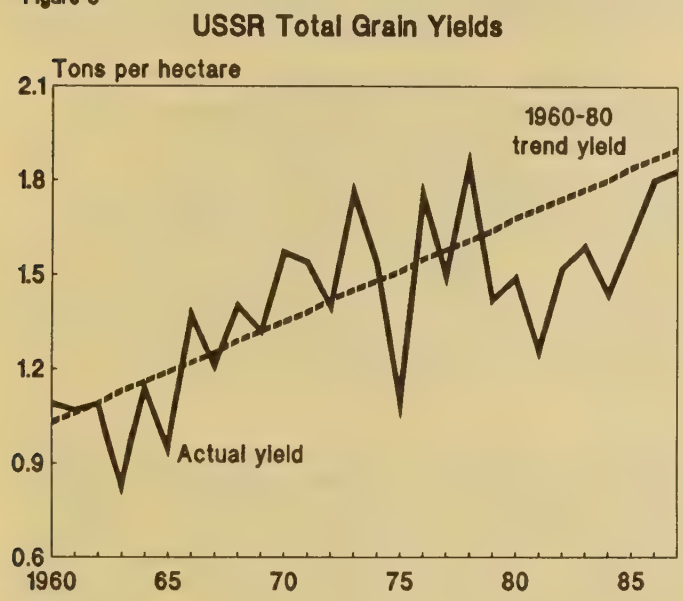
Despite the overall good showing of the grain crop, wheat production and quality were down measurably in 1987. Hampered by

Table 7--USSR production and State purchases of grains by major republics

Region	1976-80 Average		1981-85 Average		1985		1986		1987	
	Prod.	Purch.	Prod.	Purch.	Prod.	Purch.	Prod.	Purch.	Prod.	Purch. 1/
	Million metric tons									
USSR	205.0	77.7	180.3	66.6	191.7	73.5	210.1	78.8	211.4	NA
RSFSR	113.9	42.4	98.9	35.0	106.6	39.8	118.0	42.1	109.0	NA
Ukraine	43.2	14.0	39.3	13.4	40.5	14.1	43.1	15.2	50.2	18.0
Kazakhstan	27.5	16.3	21.3	12.6	24.2	13.8	28.3	16.7	27.4	14.6
Byelorussia	6.2	1.3	6.2	2.0	6.8	2.1	7.0	1.6	9.3	2.0
Baltic Republics	5.1	0.7	5.5	0.9	5.4	1.0	6.2	1.0	6.9	NA

NA = Not available. 1/ Preliminary data from 1987 USSR and Republic plan fulfillment reports.
Source: Narodnoe khozyaistvo, 1987 and Vestnik statistiki, No. 4, 1988.

Figure 8



unusual dryness in the autumn of 1986 and extreme temperature fluctuations in January, winter wheat area was its lowest since 1972. Furthermore, the quality of the spring wheat crop suffered significantly in northern Kazakhstan and West Siberia from persistent rain throughout harvesting and inadequate grain drying facilities. Total wheat production declined 10 percent from 1986 as a consequence, with the overall yield down 6 percent.

Coarse grain production, on the other hand, rose 7 percent to the second highest level, with yields at a record 1.91 tons per hectare. However, the quality was down due to harvesting difficulties. Many areas reported the moisture content of grains at their highest level in memory. Output of spring barley, which was reseeded in lost winter grain areas and aided by a cool, wet spring, increased 10 percent, largely accounting for the near record coarse grain outturn.

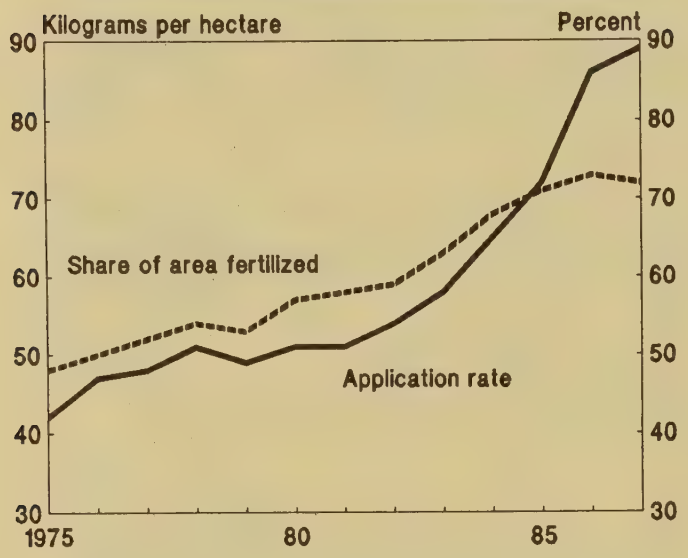
Production of corn rose 19 percent above the dismal 1986 crop, the largest outturn in 25 years. The good performance was primarily attributable to the most area since 1964, reflecting the use of corn in winterkilled areas. Corn yields averaged 3.23 tons per hectare, the best in 3 years.

Diminishing Returns from Intensive Technology

Uncertainty remains about the potential for continued growth from further expansion of IT, reform of labor organization, better incentives, and streamlining of decision-making--factors reportedly responsible for the back-to-back good harvests. Furthermore, greater use of family and team contracts, cost-accounting, and self-financing, which are touted in the Soviet press as the key to the farm sector's growth, is difficult to assess.

The 72 percent share of small grain areas receiving mineral fertilizers was down 1 percent from the 1986 peak (figure 9). However, the application of fertilizers on this area reached a record 89 kilograms per hectare in 1987, 48 percent above the 1981-85 annual average of 60 kilograms. Clean summer fallow totaled about 21 million hectares, down slightly from 1986. The greater use of fertilizers, of which weeds have been a major beneficiary, has been increasingly supplemented by herbicides and other plant protection agents (PPA). To

Figure 9
USSR Fertilizer Application to Small Grains



compensate for lower quality domestically produced PPA's, higher potency chemicals have been imported from the West. In 1985 and 1986, PPA imports were above average and the share from the West rose significantly. Improvements continue in seed varieties as well as in training farm workers.

However, Soviet reports show the marginal gains from IT have decreased. The additional grain production from IT claimed by the Soviets, from a calculation clearly open to question, was reportedly about 25 million tons in 1987, only 1 million more than in 1986.[18] This was despite the fact that reported area under IT in 1987 was about 20 percent or 6 million hectares more than in 1986. The Soviet method for measuring IT gains is questionable. The Soviets apparently compare yields on IT area not with those on the same land before the introduction of IT, but with areas not chosen for the practices. Soviet data also show not only that IT yields actually decreased in 1987 but yields on non-IT areas rose for the third consecutive year. In Kazakhstan, for example, spring wheat areas under IT yielded 10 percent less in 1987 than in 1986.[19]

The decline in IT performance partly results because the increase in quality inputs has not kept pace with the enlarged area designated for IT. Furthermore, the lower performance may reflect that although more fertilizer may raise yields, it may also increase yield variability. In years when water is adequate during critical vegetative cycles, the fertilizer and other agrochemicals are fully activated, raising yields proportionally more than good water supplies alone would explain. Conversely, in dry years yields may be lower than in wetter years, not just because of water shortage, but also because fertilizers are not fully activated.

IT is planned to encompass as much as 50 million hectares by 1990, despite disparate claims about its continued effectiveness. Constraints to broadening IT area already appear to be reflected in the slowing rate of expansion. While IT area rose about 10 million hectares in 1986 from nearly 19 million in 1985, it increased about 6 million hectares in 1987 and is planned to increase only 4 million in 1988. Furthermore, annual plans for expanding IT area have never been fully met.

The prime cost (sebestoimost') per ton of grain produced on collective and State farms has risen significantly in recent years (table 8). Although higher grain yields in 1986 brought production costs down slightly from 1985, costs in 1986 were still above the 1981-85 average. (Unit cost varies inversely with yield.) Moreover, the increased cost in 1986 occurred despite the poor average grain yield for the 1981-85 period.

The IT program, which demands increased use of higher-quality, generally higher-priced, fertilizers, pesticides, seeds, machinery, and other inputs, has raised the ruble outlays required per hectare. It remains to be seen if yields will justify these expenditures. Higher wages have also increased costs. The costs associated with IT have raised additional concerns over the program and whether it is having the desired impact.

Table 8--Cost of producing grain (excluding corn) on Soviet farms 1/

Farm type	1976-80 average	1980	1981-85 average	1985	1986
	Rubles per ton				
State	77	84	102	113	109
Collective	68	76	86	94	91

1/ The data were not released by the Soviets for 1981, 1982, 1983 and 1984. The costs do not include charges for land and fixed capital and thus understate true costs.
Source: Narodnoe khozyaistvo, various years.

Wheat Self-sufficiency?

Plans call for self-sufficiency in food grains. However, despite overall production of wheat twice the estimated 36 million tons of food needs, the Soviets continue to have difficulties, many related to climate and geography, in producing milling quality wheat. For example, even though about 60 percent of IT area in spring grains was concentrated in wheat, both production and quality fell in 1987. Quality wheat procurements in 1987 may have been closer to the 21 million tons purchased by the State in 1985 than the 30 million in 1986 which was 16 million above the 1981-85 average. In Kazakhstan, procurements of durum wheat were reported down by 63 percent last year.[20]

Bunkerweight Overstates Output

Soviet grain production in 1987, as in every year, is overstated because it is reported in a bunkerweight basis that is not discounted for moisture and foreign materials. According to an official Soviet source, on farms in the Ukraine and Estonia yields were overstated in 1985 as a result of using bunkerweights by 4 percent and 23 percent.[21] On some farms, the overstatement was as high as 30 percent. This measuring system encourages poor quality grain and may be replaced by reporting on a standard weight basis by 1991. USDA's estimate of dockage and waste for the 1987 crop was placed at 30 million tons, or 14 percent of total production (table 9). This higher-than-average figure is

Table 9--Supply and use of grain, USSR 1/

Year beginning July 1	Production 2/	Trade: Imports	Trade: Exports	Availability	Utilization: Seed	Utilization: Industrial	Utilization: Food	Utilization: Dockage-waste	Utilization: Feed	Utilization: Total	Stock change 3/
	Million metric tons										
Total grains 4/											
1981/82	158.2	47.3	0.5	205	25	5	47	16	118	211	-6
1982/83	186.8	34.3	0.5	221	25	5	47	19	118	214	+7
1983/84	192.2	32.5	0.5	224	26	5	47	21	120	218	+6
1984/85	172.6	55.5	0.5	228	24	6	47	19	123	219	+9
1985/86	191.7	29.9	0.5	221	24	5	47	18	126	220	+1
1986/87	210.1	27.5	0.5	237	25	5	47	23	130	230	+7
1987/88	211.3	32.5	0.5	243	25	5	47	30	130	237	+6
1988/89 5/	215.0	26.0	1.0	240	25	5	47	25	132	234	+6
Wheat											
1981/82	81.1	20.3	0.5	101	11	2	36	8	47	104	-3
1982/83	84.3	20.8	0.5	105	11	2	36	9	43	101	+4
1983/84	77.5	20.5	0.5	98	11	2	36	9	35	93	+4
1984/85	68.6	28.1	0.5	96	11	2	36	8	35	91	+5
1985/86	78.1	15.7	0.5	93	11	1	36	8	36	92	+1
1986/87	92.3	16.0	0.5	108	11	1	36	10	45	103	+5
1987/88	83.3	22.0	0.5	105	11	1	36	13	39	100	+4
1988/89 5/	92.0	15.0	1.0	106	11	1	36	11	43	102	+4
Coarse grains 6/											
1981/82	69.3	26.0	0	95	13	3	7	7	68	98	-3
1982/83	91.8	12.5	0	104	13	3	7	9	69	101	+3
1983/84	101.9	11.5	0	113	13	3	7	11	78	112	+2
1984/85	90.5	26.9	0	117	12	4	7	10	81	114	+4
1985/86	100.0	13.7	0	114	12	4	7	9	82	114	0
1986/87	105.9	11.0	0	117	13	4	7	11	80	115	+2
1987/88	113.7	10.0	0	124	13	4	7	15	83	122	+2
1988/89 5/	109.0	10.0	0	119	13	4	7	13	80	117	+2

1/ All are USDA estimates and forecasts except production 1981-87. Rounded to the nearest million tons, except for production and trade data. Totals may not add due to rounding. 2/ Calendar year basis. 3/ Difference between availability and total use. 4/ Includes wheat, coarse grains, buckwheat, rice, pulses, and miscellaneous grains. 5/ USDA May 1988 forecast. 6/ Includes rye, barley, oats, corn, and millet.

the result of the extremely unfavorable weather conditions during harvesting operations. Northern Kazakhstan, which is reported to lack covered threshing floors and even the most basic grain drying facilities on nearly all its State farms, was particularly affected.

Domestic use of grain for feed continues at record levels as part of the overall strategy to boost livestock production. Although total grain area was down in 1987, USDA's estimate for 1986/87 seed use of grain was increased by nearly 5 percent from 1985/86, reflecting extensive reseeding in spring 1987. Annually, 3–4 million tons of grain for seed are likely wasted as the result of poor quality and over-seeding.[22] The Soviets reportedly needed 18.5 million tons of seed in the 1988 spring for sowing small grains and pulses.[23] Industrial use of grain remains below the 1984 peak as a result of decreased production of vodka. The Soviets report that State alcohol production is down 44 percent from 1984, although it is to rise somewhat in 1988 to reduce public tensions associated with smaller supplies.[24] Further additions to grain stocks are estimated for 1987/88, as the Soviets continue to rebuild State reserves. Food use of grain, estimated at 47 million tons, remained unchanged as declines in per capita consumption offset population growth. Per capita food consumption of grain (in flour equivalent) in 1987 was down 5 percent from 1980. *(Christian J. Foster)*

Livestock Expansion Slowing

Following livestock sector expansion of nearly 4 percent in 1986 and 2 percent in 1987, the USSR may have difficulty avoiding a further slowdown in growth in 1988. Record amounts of feed were available at the beginning of 1988, however, the quality of silage, hay, and haylage was probably worse than in the previous year. Meat production gain in 1987 was achieved primarily through inventory drawdowns rather than increased animal productivity. Without improved animal productivity, meat increases in 1988 will be much smaller than in 1987.

Feed Supplies Again Record High

In 1987/88, Soviet feed supplies recorded their sixth consecutive year of growth (table 10). Availabilities of silage, hay, and haylage were the largest ever. Although the wet growing season contributed to the record production, it likely also lowered quality. Concentrate feeding probably increased modestly due to more oilseed meal feeding. Supplies of some minor feeds, such as potatoes, feed roots, and dehydrated alfalfa

Table 10--Soviet feed supplies by type in oat-unit equivalent, January 1 standard animal units, and feed per standard animal unit

Units	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87 1/	1987/88 1/
					Million metric tons				
Total feed	391.5	395.5	384.9	412.9	425.0	428.9	441.3	446.2	455.7
Coarse 2/	76.4	82.4	80.2	86.2	93.7	88.4	96.3	94.1	99.9
Pasture	61.7	61.2	61.4	62.6	64.0	63.8	64.1	63.4	63.8
Succulents 3/	83.9	85.9	78.3	98.1	100.8	106.6	105.5	106.4	109.0
Concentrates 4/	169.5	166.0	165.1	166.0	166.6	170.6	175.3	182.3	183.1
					Million units				
January 1 total animal units 5/	148.7	149.4	150.8	153.4	156.3	157.0	156.9	158.3	156.8
					Tons				
Feed per standard animal unit	2.63	2.65	2.55	2.69	2.72	2.73	2.81	2.82	2.91

1/ Preliminary. Totals may not add due to rounding. 2/ Includes hay, haylage, and straw. 3/ Includes silage, green chop, potatoes, feed roots, melons, and beet pulp. 4/ Includes grain, millfeeds, oilmeal, fish and animal meal, grass meal, feed yeasts, and whole and skim milk. 5/ In terms of cows, conversion ratios as follows: Cattle (other than cows) 0.6, hogs 0.3, total sheep and goats 0.1, horses 1.0, and poultry 0.02.

meal, were lower than the year before. The combination of larger feed supplies and lower animal inventories raised feed per standard animal unit in 1987/88. Despite the improvement, this indicator remains nearly 20 percent below the target of 3.5 tons of feed per head.

Improving Soviet Feed Rations

Soviet livestock productivity is plagued by problems in feed ration quality. The quality of roughage feeds, though better than 5 to 10 years ago, remains less than acceptable. Inadequate attention is given to balancing rations for vitamin and mineral content, and a serious shortage of protein in feed rations persists. As Gorbachev looks for ways to improve livestock productivity, all these areas are being scrutinized. A number of policies to radically increase domestic production of feed protein have been advanced since the early 1980's. These include increased production of oilseeds, pulses, alfalfa, clover, and single-cell protein.

The failure of these policies to significantly improve the feed protein situation apparently led to a policy shift under Gorbachev toward increased reliance on imported feed protein. The increased protein meal imports coincided with the largest single year improvement in feeding efficiency for hog raising on record. In 1986, a kilogram of liveweight gain for hogs required 8.2 kilograms of feed (in oat unit equivalent), compared with 8.8 the previous year (table 11). A similar improvement in feeding efficiency was achieved in cattle raising in 1986. On average, Soviet cattle at slaughter weigh only about 70 percent as much as those in the United States. The Soviets want to increase beef supplies not through more low-weight cattle, but increased per head productivity. Greater reliance on grain feeding during fattening and finishing may prove an essential aspect of higher Soviet cattle slaughter weights.

Table 11--USSR feed-conversion coefficients (kilogram of oat-unit equivalent/ kilogram of output)

Product	1970	1980	1983	1985	1986
Beef	11.5	13.4	13.2	13.5	12.9
Pork	9.2	9.2	8.8	8.8	8.2
Milk	1.4	1.5	1.55	1.6	1.5
Broilers 1/	4.6	4.3	4.1	4.0	3.9
Eggs 1/	2.8	2.0	1.9	1.9	1.8

NA = Not available. 1/ Ptitseprom system (state poultry industry) only. Eggs--oat units per 10.

Livestock Productivity Gains Slowed in 1987

The major gains in livestock productivity in 1986 were largely consolidated in 1987, with only modest improvement. Average daily weight gain, an important indicator of productivity, probably improved very little. Average slaughterweights for cattle likely fell (table 12). A large problem in 1987 was the severe winter weather and delayed spring. This resulted in above normal slaughterings and a decline in birthing rates in the first half of the year. For the year, inventories of cattle, hogs and sheep all declined (table 13).

Preliminary data indicate 1987 meat production in the USSR increased 3 percent, milk 1 percent, and eggs 2 percent (table 14). Some revisions in these data are likely, particularly for meat which could be around 18.8 million tons. Most of the growth in meat was due to more cattle and hogs slaughtered. Milk yields increased by slightly more than 2 percent and accounted for all the growth in output.

Marketed Share Expanding

The share of livestock production which is marketed continues to grow. In 1987, sales to the State of meat, milk, and eggs all grew much more rapidly than production. The

Table 12--USSR average livestock slaughter weights

Year	Cattle	Hogs
	Kilograms/head	
1980	298.7	101.2
1983	307.6	104.0
1984	310.1	104.4
1985	309.8	105.4
1986	325.9	106.6
1987 1/	322.0	106.0

1/ Estimate.
Source: Calculated from data in Vestnik statistiki, various issues.

Table 13--January 1 livestock numbers and animal units, USSR

Year	Cattle Total	Cattle Cows	Hogs	Sheep	Goats	Horses	Poultry	Total animal units 1/
				Million head				
1971	99.2	39.8	67.5	138.0	5.4	7.4	652.7	130.5
1976	111.0	41.9	57.9	141.4	5.7	6.4	734.4	136.5
1981	115.1	43.4	73.4	141.6	5.9	5.6	1,032.4	149.4
1982	115.9	43.7	73.3	142.4	6.1	5.6	1,067.5	150.8
1983	117.2	43.8	76.7	142.2	6.3	5.6	1,104.5	153.4
1984	119.6	43.9	78.7	145.3	6.5	5.7	1,126.1	156.3
1985	121.0	43.6	77.9	142.9	6.3	5.8	1,143.0	157.0
1986	120.9	42.9	77.8	140.8	6.5	5.8	1,165.5	156.9
1987	122.1	42.4	79.5	142.2	6.5	5.9	1,174.0	158.3
1988	120.5	42.0	77.3	2/ 140.5	2/ 6.5	2/ 5.9	2/ 1,195.0	2/ 156.8

1/ In terms of cows. Conversion ratios as follows: Cattle (other than cows) 0.6; hogs 0.3; sheep and goats 0.1; horses 1.0; and poultry 0.02. 2/ Estimate.

Table 14--Production of principal livestock products, USSR

Year	Meat 1/ Total	Beef and veal	Pork	Mutton, lamb, and goat	Poultry	Other	Milk	Wool 2/	Eggs
				1,000 metric tons					Millions
1966-70 average	11,583	5,187	4,327	992	853	224	80,553	NA	35,840
1971-75 average	14,004	5,985	5,394	972	1,335	318	87,446	425	51,427
1976-80 average 3/	14,843	6,827	5,009	882	1,835	290	92,662	442	63,133
1981	15,199	6,627	5,220	846	2,255	251	88,874	460	70,855
1982	15,368	6,618	5,273	816	2,425	236	91,044	452	72,409
1983	16,449	7,011	5,760	837	2,596	245	96,463	462	75,110
1984	16,985	7,244	5,927	866	2,686	262	97,906	465	76,482
1985	17,131	7,370	5,853	827	2,816	265	98,608	447	77,255
1986	18,057	7,840	6,065	894	2,988	270	102,173	469	80,746
1987 4/	18,600	5/ 8,200	5/ 6,200	5/ 890	5/ 3,050	5/ 260	103,400	455	82,100

1/ Carcass weight, including fat. 2/ Physical weight. 3/ Revision based on the average published in Narodnoe khozyaistvo SSSR v 1982. Is not consistent with average derived from last published figures for each year. 4/ Preliminary Soviet figures except where noted.
5/ ERS estimate.

amount of livestock products marketed through the consumer cooperative network has also increased. The large share of production sold to the State allowed industrial production of meat, butter, and whole milk products all to increase by 4 percent last year. Cheese production was up by 3 percent.

Per capita meat consumption reached an estimated 63 kilograms in 1987, compared with 62.5 the year before (table 15). (The 1987 figure may be revised upward if the meat production number is raised as expected.) The U.S. figure is roughly 110 kilograms. Consumption of milk and milk products (including butter in whole milk equivalent) was bolstered by large butter imports from the European Community (EC) and reached 343 kilograms, a 3-percent increase over 1986. Egg consumption reached a record 270 eggs per person. The increase in meat and milk product consumption, though respectable, fell short of seriously alleviating market shortages. The continued inability to

Table 15—USSR consumption norms of selected food products and per capita consumption

Year	Meat and fat	Fish and fish products	Milk and milk products 1/	Eggs 2/	Sugar	Vegetable oil	Potatoes	Grain 3/	Vegetables and melons	Fruit and berries
					Kilograms					
1950	26	7.0	172	60	11.6	2.7	241	172	51	11
1960	40	9.9	240	118	28.0	5.3	143	164	70	22
1970	48	15.4	307	159	38.8	6.8	130	149	82	35
1980	58	17.6	314	239	44.4	8.8	109	138	97	38
1981	57	18.0	304	247	44.5	9.1	104	137	99	40
1982	57	18.4	295	249	44.5	9.3	110	137	101	42
1983	59	17.4	313	256	44.3	9.6	109	134	102	44
1984 4/	61	17.5	319	258	44.0	9.5	108	133	102	45
1985	61	17.7	323	260	42.0	9.7	104	133	102	46
1986	62.5	18.6	333	268	44.0	9.8	107	132	102	56
1987 5/	63	18.0	343	270	46.0	10.0	105	131	100	52
1990 plan	70	19.0	330-340	260-266	45.5	13.2	110	135	126-135	66-70
Consumption norm 6/	82	18.2	405	292	40.0	9.1	110	115	130	91

1/ Including milk equivalent of butter. 2/ Number. 3/ Flour equivalent. 4/ Vestnik statistiki, No. 3, 1986, p. 57. 5/ GOSKOMSTAT Press Bulletin No. 1, 1988, in USDA/FAS TOFAS No. 98. 6/ Narodnoe blagosostoyanie SSSR (National Welfare in the USSR), 1983, p. 165.

adequately increase supplies of other consumer goods also meant that consumers continue to have more disposable income than the food markets can absorb.

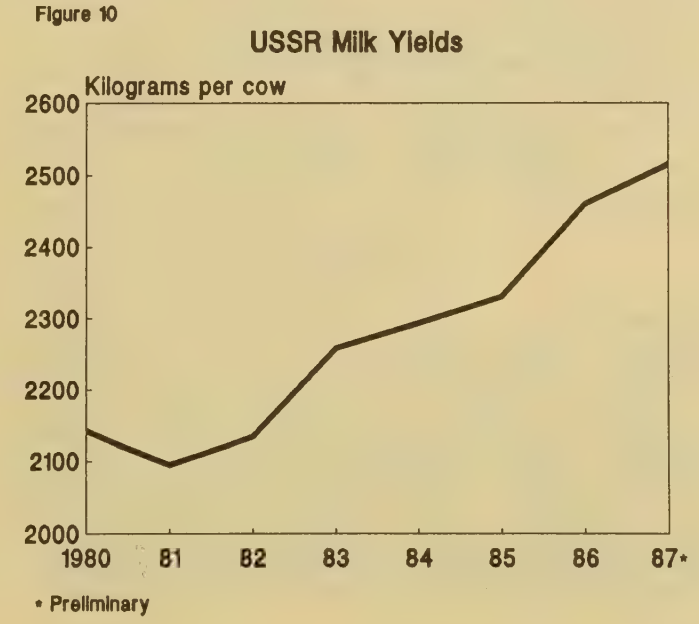
Further Slowdown in Production Looming in 1988

The livestock inventory at the beginning of 1988 makes growth in meat production comparable to last year's 3 percent highly problematic. Without efficiency improvements, Soviet meat production may increase by only 1 percent. Larger average daily weight gains will be essential for good performance and for this significant improvement in feed quality may prove necessary. The number of animals likely to be slaughtered will not allow for much expansion of beef and pork. In comparison, poultry meat production is expected to increase by at least 4 percent this year, with adequate mixed feed supplies available. Expansion of milk and egg production will probably be less than 2 percent. Soviet egg consumption is already quite high by international standards, and may not be substantially pushed in coming years. Egg production is the one livestock area where Soviet production efficiency comes closest to matching that in the West.

The "Holsteinization" campaign has boosted milk yields in the USSR since the early 1980's and is expected to continue to do so in coming years (figure 10). This program upgrades domestic breeds with imported Holstein-Friesian stock and semen. The Soviets are expected to focus attention on better utilization of available raw milk rather than a rapid increase in production. As yields increase, cow numbers will likely continue to fall. Beef cattle account for less than 5 percent of Soviet cattle inventories. The decline in dairy cows may require expansion of beef cattle numbers if beef production is to continue increasing.

Barring major drought conditions this summer, the amount of feed available is not

Figure 10



expected to be a constraining factor in 1988 though feed quality problems will persist. Per head feed availability was a record in 1987/88 and should at least remain close to this level in 1988/89. If recent performance is any indication, feed availability in 1988/89 will increase by about 2 percent. *(Edward Cook)*

Near Record Oilseed Crop Expected in 1988

Soviet oilseed output should rise in 1988, possibly reaching 12 million tons compared to an estimated 11.7 million tons in 1987 (excluding flax for fiber). The increase will be largely attributable to an improved cottonseed yield, and expanded area of sunflowerseed, soybeans, and rapeseed. Sharply increased output of sunflowerseed and rapeseed in 1987 more than offset less cottonseed (table 16). The Soviets adopted additional measures in 1987 to bolster the production and procurement of oilseeds.

New Measures to Stimulate Production

The Soviets report a chronic protein shortage in animal feeds estimated at around 10 million tons (in soybean meal equivalent) which continues to hamper the development of the livestock sector. Western and Soviet analysts concur that improving animal rations--including raising the protein content of feeds--is a straightforward way to substantially raise animal productivity, which in the USSR is one-half to two-thirds that in Western Europe and the United States. Increased protein in rations would improve feeding efficiency, including that for the large quantities of imported grain, and raise the output of livestock products.

Table 16--Oilseed production, USSR 1/

Year	Sun-flower seed	Cotton-seed	Soy-bean	Rape-seed	Other	Total
	1,000 metric tons					
Averages						
1971-75	5,974	4,349	471	8	234	11,036
1976-80	5,309	4,656	529	13	193	10,700
1981-85	4,974	4,936	505	55	171	10,641
1986	5,258	4,870	703	110	157	11,098
1987	6,075	4,445	712	296	156	11,684

1/ Cottonseed is USDA estimate; other does not include oilseeds from fiber flax and hemp; and total is an estimate.

In 1986, after several years of discussion, the Soviets officially adopted the Protein (Byelok) Program to overcome the shortage of protein feeds by the end of 1990. The program calls for significantly more oilseeds, pulses, and single-cell proteins, and a shift in roughage production from grasses to alfalfa and clover. Soviet plans for oilseed production (excluding cottonseed and flax for fiber) call for 7.9 million tons in 1988 and 10.4 million tons by 1990.[25] In 1987, oilseed output (excluding cottonseed and flax for fiber) reached 7.2 million tons versus a target of 7.6 million.[26]

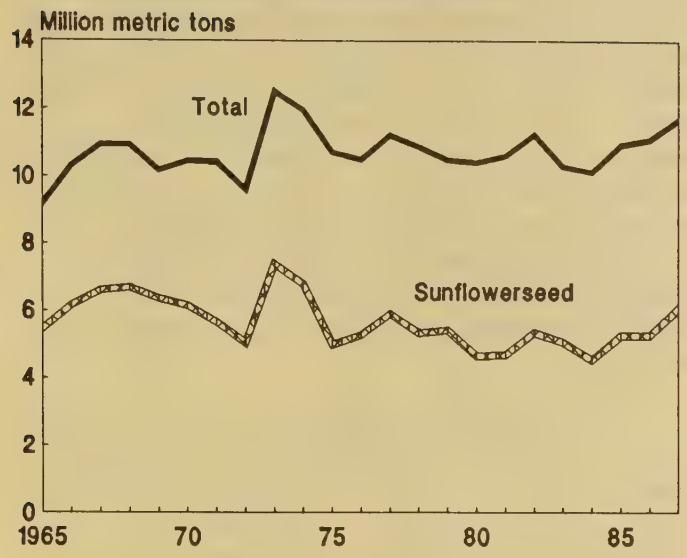
In addition to the Protein Program, a major decree was adopted by the Central Committee in May 1987 entitled, "On Urgent Measures for Increasing the Production of Oilseeds and Vegetable Oil." The resolution outlined a series of measures to raise procurement prices, to provide for broader countertrade in meal and mixed feeds, and to give special bonuses for overfulfillment of production plans. Some of the specific incentives included: (1) increases in the procurement prices of sunflowerseed, soybean, and rapeseed by 52 percent, 13 percent, and 33 percent; (2) the return of all processed meal from rapeseed sold to the State; (3) double the procurement price for oilseeds sold to the State in excess of the procurement plan and above the 1981-85 average; (4) a bonus of 50 percent of the procurement price for the first 3 years of production for farms raising oilseeds for the first time; and (5) first option to purchase hard-to-get fertilizers, pesticides, machinery and construction equipment for exceeding State sales plans. The success of these measures appears to be reflected in the near-record production of oilseeds last year.

Increased Production Likely in 1988

Sunflowerseed output in the USSR, the world's largest producer, should increase slightly in 1988 if yields rise as they did the last 3 years. Despite a much-delayed spring, output grew 16 percent in 1987 to the highest level since 1974 (figure 11). Area rose by 8 percent, a partial response to calls for seeding 4.4-4.5 million hectares.[27] The national yield rose by 7 percent in 1987, 22 percent above

Figure 11

USSR Oilseed Production



the 1981–85 average and second to the record 1.56 tons per hectare in 1973.

Although total seed output rose last year, the quality and oil content of the crop likely decreased. The Soviets report that the increased use of lower oil–yielding sunflowerseed varieties in the last 2 years produced crops with less oil. The oil content of sunflowerseeds during the 1981–85 period averaged 46.9 percent, but in 1986 it fell to 44.2 percent.[28]

Along with greater incentives and above average moisture supplies in 1987, the increase in production may be partly attributed to the expanded IT practices. The Soviets claim that as a result of IT in 1987 an additional 335,000 tons of sunflowerseed were produced.[29] Reportedly IT covered just over 1 million hectares (30 percent of area) in 1985, about 2 million hectares in 1987 (about 50 percent of the total area), and is planned for over 2.5 million hectares in 1988. Based on the positive impact of IT on the last three harvests, sunflowerseed production might meet the 1988 target of 6.3 million tons.[30] However, production of over 7 million tons by 1990, as called for in national plans, is unlikely.

Cottonseed production should increase in 1988, following poor crops in 1986 and 1987. Production in 1987 likely fell another 9 percent from the low output in 1986. The 1987 cotton crop was distressed by an abnormally cool and wet growing season, as well as heavy rain and early snowfall during harvesting. The 1986 crop was down because of a severe drought. Improved yields are expected to account for increased production in 1988 as cotton area, which has increased steadily during the past decade, stabilizes at 3.5 million hectares. The 1987 cottonseed yield fell to an estimated 1.26 tons per hectare, 17 percent below the 1981–85 average and the lowest in nearly two decades.

Output of soybeans should continue to edge upward in 1988, following another near-record last year. The 1987 crop was 712,000 tons, up marginally from 1986, and second to the 1975 record. Increased output was attributable to both expanded area, up about 5 percent, and a relatively high yield, although slightly below 1986. Plans call for further intercropping of soybeans with corn and more sown area, particularly in Moldavia, the Ukraine, and the North Caucasus. Currently, about 75 percent of all soybeans are grown in the Far East.[31] IT, which was to cover all soybean area in 1987, reportedly accounted for an additional 170,000 tons.[32] Furthermore, IT plans call for 829,000 hectares of soybeans in 1988. More soybeans are expected this year, but not the 1988 target of 800,000 tons nor 1 million tons by 1990.[33]

Rapeseed production is expected to continue upward in 1988, as area expands. Record 1987 rapeseed outturn, nearly three times greater than in 1986, reflected a massive increase in area. It rose by nearly three times to an estimated 407,000 hectares, the most ever. The Soviets, like the East Europeans, appear to be emulating worldwide success cultivating rapeseed with high oil and low erucic acid content. Soviet plans call for around 1 million hectares by expanding areas in the Non-Black Soil Zone, Belorussia, the Baltics, the Urals region, Siberia, and northern Kazakhstan.[34] Soviet long-term plans optimistically envisage rapeseed output of 1.5 million tons by 1990.

Record Meal and Oil Output Expected in 1988

Domestic oilseed meal output in calendar 1988 is expected to rise to a record level of about 5 million tons (soybean meal equivalent) as a result of increased soybean imports in 1987/88 (October–September) and greater 1987 oilseed production. In 1987, oilseed meal production was an estimated 4.5 million tons

(soybean meal equivalent), nearly 10 percent below 1986 output, primarily due to reduced soybean imports in 1986/87. Soviet vegetable oil production in 1988 is estimated at a record of nearly 3.5 million tons, the result of a good 1987 oilseed crop and large soybean imports in 1987/88. Oil output rose about 4 percent in 1987 to about 3 million tons, compared to a 13-percent increase in 1986. Imports of vegetable oil may decrease about a third in 1987/88 (October-September) due to the rise in domestic oil production. *(Christian J. Foster)*

Sugarbeet Success Story Sustainable?

The Soviets believe that in 1988 they can reproduce the sugarbeet successes experienced in 1986 and 1987. In 1986, the success was qualitative as the Soviets raised the content of sugar in beets accepted at plants by 3 percent over the 1981-85 average and the extraction rate rose 6 percent from 1985. The 1987 success was quantitative as well as qualitative. Sugarbeet production reached 90.4 million tons--the largest output in 9 years and 13.5 percent more than a year before (table 17). The large crop was obtained despite a long, cold spring that delayed planting in most sugarbeet growing regions and an early and cold fall. Sugarbeets were sown on 3.4 million hectares, about the same as in 1986, but yields reached an estimated 2.66 tons per hectare, the highest since 1976. Sugar extraction rates may have almost matched 1986 levels.

The Soviets attribute the gains to better agronomic practices on farms and improved coordination with processors. In 1980, IT was used on 65,000 hectares. By 1986, IT was applied to 2.6 million hectares, but dry conditions reportedly inhibited its potential. The wetter conditions in 1987 made IT more effective on its 2.8 million hectares. The Soviets state that IT fields (which reached 82

Table 17--Area, yield, and production of selected crops, USSR

Year	Seed cotton	Sugar-beets	Sunflower-seed	Fiber flax 1/	Potatoes	Vege-tables	Fruit, berries, grapes
				1,000 hectares			
Area							
1966-70 average	2,527	3,582	4,837	1,341	8,238	1,440	2,626
1971-75 average	2,810	3,527	4,474	1,234	7,953	1,601	3,304
1976-80 average	3,043	3,745	4,471	1,156	7,020	1,629	3,339
1981-85 average	3,242	3,504	4,142	1,020	6,771	1,710	3,321
1986	3,475	3,399	3,848	975	6,373	1,698	3,167
1987	3,527	3,404	4,156	971	6,239	1,713	NA
				Metric tons per hectare			
Yield 2/							
1966-70 average	2.41	22.8	1.32	0.34	11.5	13.2	3.7
1971-75 average	2.73	21.7	1.34	0.37	11.3	13.7	3.7
1976-80 average	2.93	23.6	1.19	0.34	11.8	15.2	4.5
1981-85 average	2.56	21.8	1.20	0.37	11.5	16.1	5.4
1986	2.37	23.3	1.36	0.38	13.7	16.4	5.8
1987	2.29	26.6	1.46	0.44	12.1	15.9	NA
				1,000 metric tons			
Production							
1966-70 average	6,099	81,118	6,389	458	94,813	19,472	9,710
1971-75 average	7,667	75,984	5,974	456	89,782	22,974	12,393
1976-80 average	8,932	88,732	5,309	393	82,571	26,313	15,177
1981-85 average	8,314	76,379	4,974	377	78,351	29,226	17,807
1986	8,233	79,299	5,258	366	87,186	29,740	18,338
1987	8,089	90,405	6,075	425	75,908	29,216	NA

NA = Not available. 1/ Flax grown for fiber production. 2/ Soviet reported yields vary from calculated yields in some instances.

percent of the total sugarbeet area in 1987) are 16–39 percent more productive than regular fields, and the additional output of sugarbeets due to IT was 12 million tons in 1987.[35] (However, as noted previously, the Soviet method for calculating IT gains is questionable.) In 1988, IT was to include 2.9 million hectares. Two-thirds of the sowing area was planted with highly effective varieties and hybrids, 400,000 hectares more than in 1986. Despite Soviet claims about IT, input supplies are inadequate to support modern agriculture. For example, in 1987 large sugarbeet areas were treated with the obsolete herbicide "THAN." Also, a sharp shortage of the regular sugarbeet herbicide "BETANAL" exists.[36]

Refined sugar output in 1987 was a record because of larger raw sugar imports and the size and quality of the sugarbeet crop (and despite the fact that government purchases for processing increased less than production (table 18). The sugar content and extraction rates were high despite the wet conditions. The Soviets reported high sugar content of beets in parts of the Central and Southern European regions of the RSFSR, including Orel, Voronezh, Krasnodar and others.[37]

The Soviets credit the improvements to the introduction of the contract brigade method of production, payment for sugarbeets based in part on sugar content, and other incentives for farms and processors based on output of refined sugar.[38] The Soviets estimate that average sugarbeet losses during harvesting run 10-11 percent of the gross output and in storage up to another 5 percent.[39] In the last few years, the overall capacity of sugarbeet processing plants has increased, which raises extraction rates by cutting losses that occur with long delays between harvesting and processing. During 1986-90, sugarbeet processing capacity is to increase by 115,000-tons-a-day, largely through reequipping old facilities. The emphasis will be on plants with capacities of 6,000 tons-a-day. In recent years, 11 new plants in the RSFSR, the Ukraine, and Moldavia brought the total in the USSR to 323.[40] The capacities of ventilated warehouses and hard floor, open storage sites were also increased.

Notwithstanding last year's large supplies, demand was greater and sugar disappeared from store shelves, especially in much of the Urals, Altay, Donbas, the Volga Valley, the Ukraine, and other areas. In many places rationing was introduced, for example 1.-1.5 kilogram of sugar per person monthly. Still, many people in the countryside reportedly cannot buy sugar in stores at all.[41] Demand has heightened as moonshining has increased to offset the decline in State produced liquor.

> The sharp reduction of liquor production (by 44 percent, as compared with 1984) has led to a situation where 3.6 million liters of home brew and 167,000 home stills were confiscated in the country last year. More than 500,000 people or twice as many as in 1986 and 13 times as many as in 1984, were brought to administrative and criminal responsibility for moonshining last year. The scope of illicit distilling exceeds that of government-run operations by 40 to 50 percent. It has now been decided, the

Table 18--USSR sugar production and trade 1/

Year	Industrial production: Total	Industrial production: Of which from beets	Imports: Raw: Total	Imports: Raw: From Cuba	Imports: Refined	Exports refined
	1,000 metric tons					
1966-70 average	10,203	8,638	2,082	2,081	2	1,097
1971-75 average	9,694	7,771	2,154	1,812	82	249
1976-80 average	10,854	7,370	3,845	3,374	439	139
1981-85 average						
1986	12,729	8,000	5,158	3,861	23	301
1987	13,700	2/ 9,000	2/ 5,200	2/ 4,000	2/ 100	2/ 200

1/ All data on refined basis except raw imports. The factor for converting raw to refined is 0.92.
2/ Estimate.

general [from the Soviet Interior Ministry] said, to somewhat increase the output of some categories of alcoholic drinks, including brandy, grape wines and beer, so as to prevent unhealthy turmoil.[42]

(Yuri Markish)

Cotton Decline Continued in 1987

Weather in 1986 and 1987 certainly was a major factor in keeping the Soviet seed cotton yields 7 percent and 11 percent below even the revised 1981-85 averages. The revised yields are 13 percent below the 1976-80 level, demonstrating the debilitating effects of massive soil salinization. The Soviets reduced cotton area and production targets in 1988 in order to improve crop rotation cycles. Normal weather in 1988 may allow the Soviets to reach the 8.6-million-ton plan. Although cotton is totally irrigated and highly fertilized (at a rate over twice that for irrigated cotton in California and Arizona), and defoliated for harvest, the Soviets consider that less than 10 percent is raised under the new IT. Complete IT requires the best seed varieties and improved pesticide and water application regimes.

In contrast to 1986's drought conditions, 1987 was rainy and cool. Cold days during March-May, with rain on 49 of them, delayed sowing and also caused resowing on 1 million hectares. Summer temperatures were unusually cool. Finally, rain, snow, and cold plagued the 2-week late harvest. Soviet seed cotton production declined 2 percent to 8.1 million tons in 1987. Area was up only 1.5 percent.

Conflicting factors affected the quality of the cotton crop and raise some uncertainty whether the Soviets will be able to sustain the increase in ginning rates that occurred during 1984-86. Using Soviet data, ginning rates in 1985 and 1986 approached 32 percent and partially offset declines of seed cotton production (table 19). In 1987, about 60 percent of the crop was machine-picked, considerably less than planned. A high level of hand picking generally contributes to improved fiber quality. However, rain and snowfalls during the harvesting may have cut the quality.

Data released in 1987 provide further details on the magnitude of overreporting of seed cotton and lint cotton production in the USSR in the first half of the 1980's (table 20).

Table 19--USSR lint cotton production and trade 1/

Year	Production	Imports	Exports	Domestic supplies 2/
	1,000 metric tons			
1980	2,700	49	843	1,906
1981 3/	2,402	22	916	1,508
1982 3/	2,312	26	949	1,389
1983 3/	2,172	177	774	1,575
1984 3/	2,597	166	642	2,121
1985	2,782	187	659	2,310
1986	2,647	88	713	2,022
1987	2,580	75	747	1,908

1/ Calendar year. USSR published data, except for ERS production estimate for 1987, International Cotton Advisory Committee trade estimate for 1987, and footnote 3.
2/ Production minus net exports. 3/ ERS production estimates for individual years based on USSR 1987 data of 2,453 million-ton average for 1981-85.

Table 20--USSR revised cotton data 1/

Year	1986 Publication	1987 Publication	Over-reporting
	1,000 metric tons		Percent
Seed cotton			
1980	9,960	9,100	9
1981	9,636	NA	
1982	9,282	NA	
1983	9,212	NA	
1984	8,619	NA	
1985	8,755	8,755	0
1981-84 average	9,187	8,204	12
1981-85 average	9,101	8,314	9
Cotton lint			
1980	2,804	2,700	4
1981	2,894	NA	
1982	2,788	NA	
1983	2,586	NA	
1984	2,343	NA	
1985	2,642	2,782	-5
1981-84 average	2,652	2,370	12
1981-85 average	2,651	2,453	8

1/ The 1986 publication is Narodnoe khozyaistvo SSSR v 1985 g. The 1987 publication is Narodnoe khozyaistvo SSSR v 1986 g.

In 1981–84, overreporting of seed cotton and lint averaged 12 percent. In 1980, seed cotton was overstated by 9 percent, lint 4 percent. Now with a more accurate statistical base for assessment and planning, the strategies for cotton cultivation have been changed, particularly in Uzbekistan.

The Uzbekistan plan for 1988 has been cut by half a million tons to 5.25 million tons of raw cotton and 1.68 million tons of fiber. To help restore the fertility of the soil in Uzbekistan, 65,000 hectares are to be fallowed in 1988; by 1990 the target is 200,000 hectares.[43] Cotton–alfalfa rotations are to be expanded. In Uzbekistan, although levels of fertilizer applications were high, 283 kilograms per hectare in 1987, the Soviets estimated that improper application during the last 3 years lowered cotton output per unit of active ingredients in fertilizers by two–thirds (compared to norms).[44]

Although rotation, seed, and agrochemical inadequacies may be hindering Soviet cotton production, soil salinization is the reason for the decline in yields since the second half of the 1960's and the 1970's. Uzbekistan now uses 14,000 cubic meters of water for 1 hectare of irrigated cotton land. Soviet agronomists calculate that only 10,000–11,000 cubic meters should be used. Much water is being lost right on the fields, which causes secondary salinization. According to Soviet sources, irrigation technology is in very poor condition and needs improvement. Soviet intentions to charge for irrigation water are aimed at curbing such excess use. The plans to cut down on newly irrigated lands mean that improvement in cotton yields must come from better management and rehabilitation of presently irrigated land, rather than using unspoiled land.

Another way for the Soviets to improve the cotton situation is to improve the lint yield and quality. Some 50,000 tons of lint gathered from the 1986 harvest are still in Republican cotton cleaning plants after rejection by light industry.[45] Some of the quality problems do not concern the raw cotton, but the storage and processing inadequacies caused by obsolete equipment, labor indifference, and underdeveloped infrastructure. In Uzbekistan, the most advanced "cotton" Republic, 320 procurement centers out of the total of 550 do not have cleaning–drying facilities. Storage capacities for wet and dry cotton at ginning mills reached only 6–7 percent of need.[46]

The Soviets hope that in family–centered Soviet Central Asia the use of family teams on cotton farms will increase production and productivity. In 1987, the 4,750 family teams in Uzbekistan (between 10 and 20 percent of total contract teams) had an efficiency often two to three times greater than average. *(Yuri Markish)*

VALUE OF AGRICULTURAL IMPORTS INCREASES

Soviet agricultural imports in 1988 may increase 5 percent from 1987's estimated $16 billion (table 21).[47] Increased grain unit values, perhaps by as much as 20 percent, will raise import costs even as volume remains about even. Sugar, which has become the largest item in the agricultural import bill since it overtook grains in 1986, may decline somewhat as a result of greater domestic output from sugarbeets (table 22). The government, in an effort to keep sugar on store shelves despite increased demand for home production of liquor, however, may maintain the high imports estimated for 1987. Imports of fruits and vegetables may be up to help offset the poor domestic output in 1987 and to generally raise total supplies to provide consumers a more varied diet (table 23). Likewise, animal product imports are likely to increase as the Soviets seek to improve supplies faster than domestic production alone can support.

Despite larger agricultural imports likely in 1987 and 1988, they will remain more than 10 percent below the 1980–85 average of $18.6 billion (figure 12). Grain import costs, the primary hard currency expense among agricultural imports, in 1987 and 1988 will average less than half the level of 1981–85. The lower cost of agricultural and, particularly, grain imports helps the USSR offset lower than anticipated total and hard

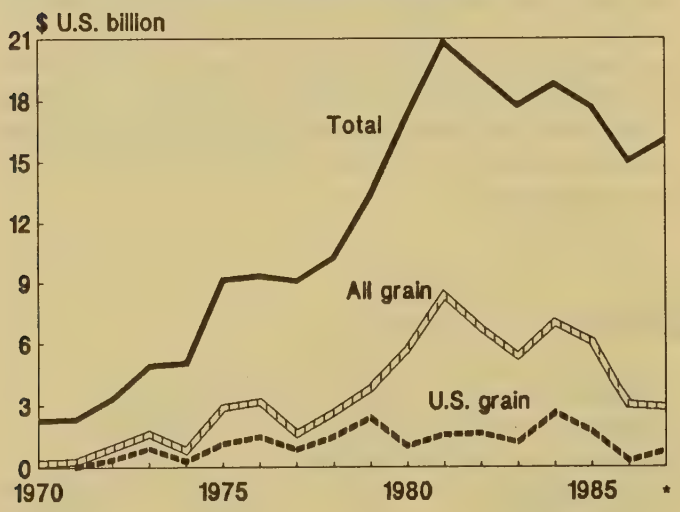
Table 21--Summary of USSR agricultural imports, by value 1/

Commodity	1985	1986	1987 2/
	Million dollars		
Grain and products	6,044	2,992	2,900
Sugar	4,072	4,620	4,850
Livestock and products 3/	2,018	2,145	2,300
Fruits, vegetables, and nuts	1,317	1,667	1,800
Coffee, tea, cocoa, and beverages	1,681	1,345	1,500
Tobacco and products	844	898	900
Oilseeds and oilmeal 2/	363	594	900
Fats and oils	777	342	350
Cotton	304	130	200
Other	268	283	300
Total	17,688	15,016	16,000

1/ Derived from USSR official data converted at $1.20 in 1985 and $1.42 for 1986. 2/ Estimates with an exchange rate of $1.56 for 1987. 3/ Includes furs, raw hides, wool, and animal fats including butter.

Figure 12

USSR Agricultural Imports



*Estimates

Table 22--USSR agricultural imports, by value

Commodity	1984	1985	1986
	Million dollars 1/		
Wheat	4,607.9	2,992.4	1,765.0
Barley	169.8	422.2	253.9
Corn	1,735.5	2,328.5	835.5
Other grain	85.5	65.5	10.6
Sorghum	217.0	141.7	3.2
Wheat flour	94.7	44.3	36.2
Rice, milled	80.5	49.8	87.6
Subtotal	6,990.8	6,044.4	2,992.0
Animals for slaughter	113.4	88.3	86.8
Breeding animals	14.9	16.3	24.9
Meat and meat products	1,092.3	1,026.2	1,287.2
Milk and milk products	84.6	90.6	115.1
Eggs and egg products	22.7	16.8	20.0
Animal fats including butter	287.8	289.9	147.3
Wool	354.6	465.4	458.6
Furs	2.6	3.1	2.9
Raw hides	53.5	21.9	1.8
Vegetables and potatoes	406.4	477.0	590.7
Fruit and berries, fresh	408.3	414.3	570.2
Fruit, dried	99.2	84.6	98.5
Fruit and berries, processed	207.3	217.9	307.3
Nuts	121.2	123.8	100.3
Sugar, raw	4,170.3	4,033.7	4,614.0
Sugar, refined	147.6	38.0	6.3
Coffee, cocoa, tea	881.8	898.6	859.2
Spices	46.6	66.9	85.6
Beverages	842.8	782.1	485.8
Tobacco, raw	291.5	279.3	240.8
Tobacco products	587.8	564.9	657.2
Natural fibers	334.1	334.7	151.1
Oilseeds	237.4	247.8	521.0
Oilseed meal 2/	74.8	114.8	73.1
Vegetable oils	526.2	591.1	209.8
Technical fats and oils	231.6	185.5	132.2
Seeds and planting materials	163.9	170.3	176.3
Total	18,796.1	17,688.2	15,016.3

1/ USSR official data converted at $1.23 in 1984, $1.20 in 1985, and $1.42 in 1986.
2/ Estimates.

Table 23--USSR agricultural imports, quantities of principal items

Commodity	1984	1985	1986
	1,000 metric tons		
Wheat	1/ 28,162	21,400	15,700
Barley	1/ 1,392	3,700	3,600
Corn	1/ 12,429	18,600	7,200
Other grain	--	500	300
Sorghum	1,990	1,452	39
Wheat flour 2/	579	264	271
Rice, milled	150	127	363
Subtotal	44,702	46,043	27,473
Meat and meat products 3/	805	857	936
Shell eggs 4/	451	378	387
Butter	198	276	194
Wool, scoured	90	109	115
Vegetables, fresh	158	190	271
Vegetables, canned	445	472	464
Fruit, fresh	1,100	1,122	1,269
Fruit, dried	103	81	91
Sugar, raw	4,972	4,305	5,158
Sugar, refined	732	195	23
Coffee	48	57	39
Cocoa beans	150	155	163
Tea	95	108	110
Tobacco	103	95	67
Cotton lint	166	187	88
Oilseeds	696	924	2,124
Oilseed meal 5/	325	696	375
Vegetable oil, edible	766	898	530

-- = Negligible or none. 1/ ERS estimate; official USSR sources report only value. 2/ Flour in wheat equivalent at 72 percent. 3/ Does not include live animals. 4/ Million pieces. 5/ ERS estimate.

currency export earnings largely caused by decreased world energy prices.

Soviet [dollar] export earnings valued at the official USSR ruble/dollar exchange rates increased in 1986 and 1987, as the value of the dollar declined versus other Western currencies. Exports in ruble value, however, have fallen each year since 1984 (table 24). (The ruble/foreign currency exchange rates, including the ruble/dollar rate, are administratively set in the USSR and would not reflect the relative purchasing power of the ruble to any particular foreign currency were the ruble convertible.)

Soviet agricultural exports have averaged $2–$3 billion each year since 1974, with 1987 and 1988 likely at the bottom half of that range. Cotton lint exports, which accounted

Table 24--USSR foreign trade

Direction	1985	1986	1987
	Billion rubles		
Exports to	72.5	68.3	68.1
socialist countries 1/	44.3	45.6	44.2
Western industrialized countries	18.6	13.1	14.2
developing countries	9.6	9.6	9.8
Imports from	69.1	62.6	60.7
socialist countries 1/	42.2	41.8	42.1
Western industrialized countries	19.3	15.9	13.9
developing countries	7.6	4.9	4.7

1/ Includes Eastern Europe, Cuba, Mongolia, North Korea, PRC, and Vietnam.

for 47 percent of agricultural exports during 1984–86, will likely be close to 1986's $1 billion (table 25). A slight decline in the volume of exports associated with the small 1986 and 1987 domestic cotton crops may be offset by higher unit value prices (table 26). The next most important agricultural export is grain, which consists primarily of purchases abroad for direct shipment to Cuba and other dependencies.

The value of hard currency exports fell each year from 1983's record through 1986. However, hard currency earnings in 1987 likely were up slightly in ruble value, but perhaps 10 percent or more in dollar value. Some experts expect oil prices not to improve in 1988, which means that any gain in 1988 earnings would be based on the volume increase to the West. Revenues from energy sales to the West in 1987, which usually account for almost 60 percent of hard currency exports, were up about 20 percent (dollar value).[48] About 7 percent of the increase was due to larger volume, with the rest explained by the higher dollar value (figure 13). The Soviets use gold and other precious metal sales to finance hard currency imports. Gold sales in 1987 were estimated at 300 tons, down about a quarter from 1986; platinum sales were estimated to be up a third to 400,000 ounces. Arms sales are another important hard currency earner.

Total Soviet purchasing power is not up as much as the dollar values indicate. Although

Table 25--USSR agricultural exports, by value

Commodity	1984	1985	1986
	Million dollars 1/		
Wheat	265.0	189.3	133.1
Barley	6.1	16.4	3.5
Corn	32.8	27.0	18.0
Oats	1.4	1.9	1.5
Rye	--	--	0.8
Rice	10.5	4.6	12.4
Flour-milling products and pulses	128.3	141.8	160.9
Subtotal	444.2	380.9	330.3
Meat and products	40.3	39.6	47.9
Milk and products	41.5	43.5	47.5
Animal fats including butter	70.3	69.5	79.0
Wool	14.6	24.8	45.4
Furs	124.4	135.4	145.3
Raw hides	8.0	39.9	64.9
Vegetables, fruit, and nuts	44.4	42.5	47.2
Sugar, refined	58.0	36.3	82.1
Confectionaries	7.7	8.4	8.5
Beverages	72.6	92.9	176.4
Tobacco products	6.0	5.8	6.5
Oilseed, tobacco, and other raw materials	92.4	70.8	51.2
Natural fibers	1,036.4	1,033.4	1,174.2
Vegetable oils	61.0	82.4	76.0
Technical fats and oils	3.7	8.4	2.9
Seeds and planting materials	38.2	48.5	42.6
Total	2,163.7	2,163.1	2,427.8

-- = Negligible or none. 1/ USSR official data converted at $1.23 in 1984, $1.20 in 1985, and $1.42 in 1986.

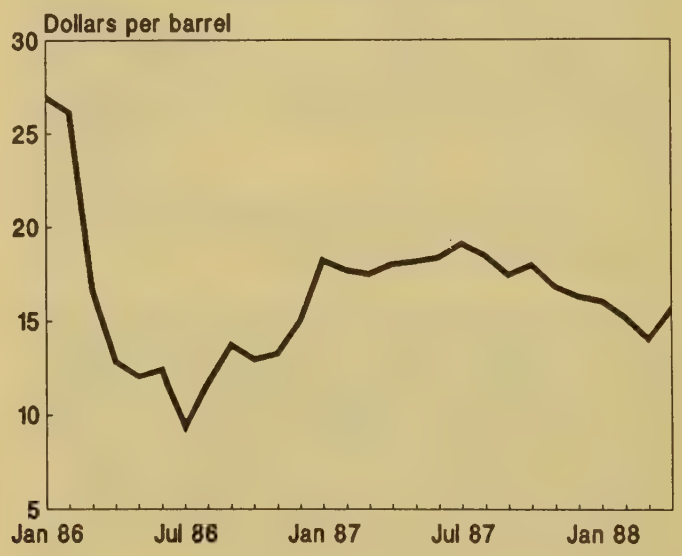
Table 26--USSR agricultural exports, quantities of principal items

Commodity	1984	1985	1986
	1,000 metric tons		
Wheat	1/ 1,614	1,325	1,181
Rye	--	--	7
Barley	1/ 50	145	42
Corn	1/ 235	266	221
Oats	1/ 9	15	15
Flour 2/	331	307	350
Groats	210	379	541
Pulses	61	64	66
Rice 3/	40	15	63
Subtotal	2,550	2,516	2,486
Meat and products	27	27	28
Butter	17	17	16
Sugar, refined	189	164	301
Tea	30	18	5
Cotton, lint	642	659	713
Flax tow	13	8	7
Vegetable oil, edible	106	135	141
Starch	25	26	23

-- = Negligible or none. 1/ ERS estimate; official USSR sources report only value.
2/ Flour in wheat equivalent at 72 percent.
3/ Sum of Soviet country-specific data.

Figure 13

USSR Oil Export Prices



Soviet energy sales are generally done on a U.S. dollar basis, most of their hard currency imports (except U.S. goods) are denominated in other currencies which have appreciated against the dollar.[49] While the fall in the value of the dollar has decreased the buying power that results from Soviet energy exports, the devaluation has made U.S. products, including grain and oilseeds, more attractive.

The Soviets' interest in increasing hard currency exports or using barter for trade explains their interest in government trade negotiations. In articles and meetings, Soviet trade officials emphasize their interest in balancing trade and have raised the issue in bilateral grain negotiations. Coinciding with grain trade negotiations with the Argentinians, the Soviets were recently successful in getting a contract to deepen the major grain export port of Bahia Blanca.

Trade Reforms Continue

The USSR began major reform of its trading policies and organizations in 1986 to change the structure of its exports and to improve the use of imports.[50] A fundamental feature of the reforms is the decentralization of trade decisionmaking and operation within the Soviet economy. Most new economic legislation mentions foreign trade, including the 1988 draft charter for collective farms and the draft law on cooperatives.

The Soviets now openly acknowledge that in the past "imports were a means of covering internal shortages and exports were regarded as a necessary evil, virtually the price paid for imports."[51] Machinery and equipment account for only 2 percent of exports to the West because "any economic manager sought, first and foremost, to avoid them [exports] as far as possible. ....the quality of this [export] output had to meet world standards, plus a guarantee of after sales service."[52]

Increased oil prices in the 1970's helped the Soviets avoid critically examining their trade policies and programs. "The steep increase in world prices in the seventies led to an almost 20-fold increase in the price of oil, and it appeared that this situation would persist at least until the end of the century. In that case, why change the export structure and seek new reserves. .... In a word, we [Soviets] were totally unprepared for the abrupt change in the world market situation in the mid-1980's, when the price of oil fell from $34 or more a barrel to $18."[53]

Agricultural imports increased, financed by sharply higher export earnings. Agricultural imports rose from an annual average of $2.6 billion in 1970-72 (20 percent of total imports) to an annual average of $19 billion in 1981-85 (24 percent of total imports). Grain imports rose from an average of $0.5 billion in 1970-72 (3 percent of total imports) to $6.7 billion in 1981-85 (8 percent of total imports) [figure 14]. Hard currency grain imports rose from $0.4 billion (6 percent of hard currency imports) in 1970-72 to $5.7 billion in 1981-85 (21 percent of hard currency imports) [figure 15].

Figure 14
USSR Agricultural and Grain Import Shares

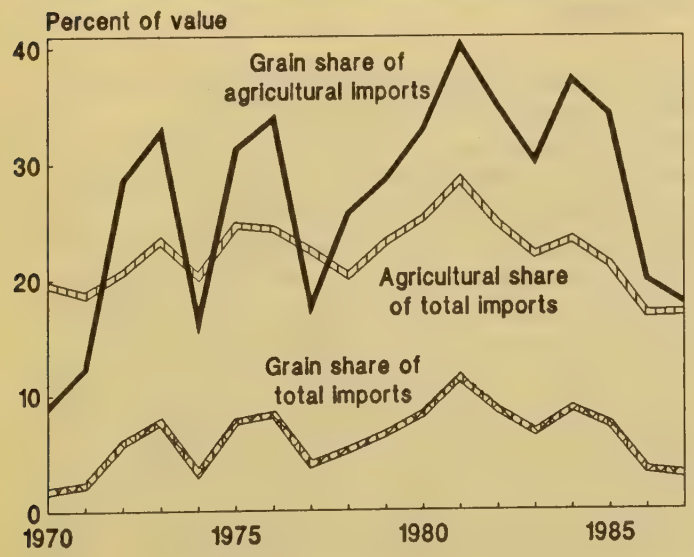
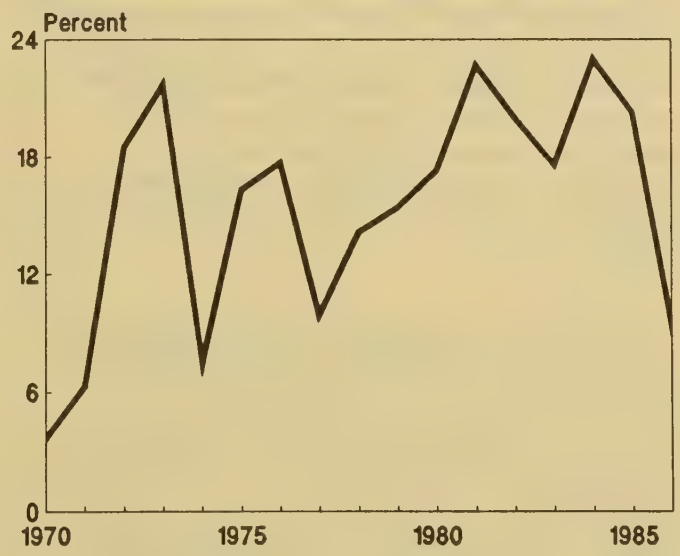


Figure 15
USSR Grain Share of Hard Currency Imports



Gorbachev stated that much of the modest national income growth in the first half of the 1980's was due to oil exports and that agricultural imports were reduced because of the lower hard currency revenue.[54] The Soviets cut the volume of much-needed feed protein imports in 1984 by over 80 percent from 1983 despite a dismal 1984 oilseed harvest. Feed protein imports remained at less than half the 1983 level through 1986. The 1984 grain crop was the second lowest in 9 years which kept Soviet grain import requirements high in 1984 and 1985. However, larger oilseed and grain harvests since 1984 and lower grain prices have helped the USSR cut its agricultural import bill. Agricultural imports in 1986-87 averaged an estimated $15.5 billion, 17 percent of total imports. Grain imports in 1986-87 averaged less than $3 billion, 3 percent of total imports. Hard currency grain imports averaged about 9 percent of total hard currency imports.

The Soviets also financed increased imports of machinery and equipment with the energy exports. The imports now are seen as a mixed benefit. Gorbachev stated that the equipment purchases stifled the process of scientific and technical development in the USSR. "The oil boom allowed us to earn foreign currency, and we thoughtlessly bought equipment to solve production tasks and purchased spare parts without developing our own engineering and science properly."[55]

Articles concerning the recent disbanding of the Ministry for Machine Building for Light and Food Industry provide examples of inappropriate use of imported technology in food processing. The Soviets were confounded that potato peelers from the Netherlands required "eyeless" potatoes to be effective, automatic broiler processing equipment required chickens of similar size, and equipment to manufacture flaked potatoes required potatoes whose flesh does not darken.[56]

The trade reforms initiated in 1986 were to ensure the more rationale use of imports and raise the level of value-added exports. The reform, however, left about 80 percent of trade, including fuel, raw materials, and most food, under the central control of organizations in the Ministry of Foreign Trade. Most equipment, machinery, and technology trade was put under the control of the relevant domestic industries, however. Removing one layer of bureaucracy was aimed at improving the flow of information between the Soviet exporters and importers and their foreign counterparts. In addition, enterprises were allowed to retain a major portion of the hard currency earnings from exports to buy imports, albeit only for high priority capital import goods. Tying the imports directly to exports is to encourage enterprises to meet the rigorous quality demands of the export market and to use imports productively. Although many of the reform provisions focused on improving the structure and effectiveness of trade within the CMEA countries, the Soviets also stressed cooperation with the West, including participation in joint ventures.

The Soviets continue to modify their trade policies, programs, and organizations, complaining that the decision process regarding trade still has too many stages and that the enterprises and the new foreign trade organizations were not taking the initiative. A September 1987 decree gave tax breaks on foreign venture profits, reduced some of the prior approval requirements for imports, authorized loans of hard currency for imports to help develop export production facilities, and allowed local governments to retain all export earnings from border trade.[57] Also, border trade earnings could be used for consumer imports, rather than only capital imports). The Ministry of Foreign Trade, weakened during the reforms, was combined with the State Committee for Foreign Economic Relations in January 1988 and renamed the Ministry of Foreign Economic Relations.

Gosagroprom established three foreign trade organizations as part of the decentralization. Trade in grain, oilseed, and meat and dairy products, however, remains outside Gosagroprom's jurisdiction. Soyuzplodoimport is responsible for the export of alcoholic and nonalcoholic beverages, starch, canned and fresh vegetables and fruit, honey, tobacco, seeds and seedlings and the import of cocoa beans and products, coffee, tea, spices, nuts, fruits and vegetables, baby food, tobacco, and seeds and seedlings. Skotoimport is responsible for the export of breeding and sporting horses; breeding swine, sheep, goats, and furbearing animals; horses

for slaughter; bull semen; industrial casein, and a variety of other animal byproducts; and import of breeding stock, research animals, embryos, and slaughter livestock. Vneshtechagroprom includes 6 firms (see below) concerned primarily with exporting agro-industrial technology and equipment and secondarily with securing and ensuring the productive use of imported equipment and technology. One of the three objective clauses in the charter specifies priority development of ties with socialist countries.

Many Soviet economists acknowledge that the problems with the structure of their trade, including agricultural trade, and its detrimental effect on the economy are related to the lack of linkage between domestic and foreign prices. Such thinking led to a call for the convertibility of the ruble:

> "Hence the need for the gradual, purposeful alignment of domestic production conditions with world condition in terms of prices, costs, and technical and other parameters and the introduction in the future of real exchange rates and convertibility of the ruble, also in relation to capitalist countries' currencies. The convertible ruble will considerably simplify the identification and implementation of promising avenues of cooperation, especially in production sharing forms, and will link the domestic market directly to the foreign market, although the introduction of the convertibility, even if initially only on a limited scale requires first of all the restoration of equilibrium between exports and imports in hard currency, the strengthening of the country's export base, and the rationalization of the domestic pricing system.[58]

The major overhaul in Soviet prices to be in place by 1991 may have limited impact on agricultural trade, including imports of animal products and feedstuffs. Public resistance may be so great that price increases will not be large or that consumers' incomes will be raised to offset the price increases. For the past two decades, the government has allowed income growth far in excess of the increase in quantities or prices of animal products and many other consumer goods. The underlying demand for animal products as well as many other goods has become so great that amounts

Firm	Responsibility
Agromechanizatsia	Technical assistance for projects to mechanize and electrify agricultural production abroad.
Agroprompererabotka	Technical assistance for food, including fruit, vegetable, meat, and dairy industry projects abroad.
Agrospetsoborudovanie	Export and import equipment, machinery, and parts for the APK.
Agrointer	Operating joint ventures and establishing ties between Gosagroprom and foreign agro-industrial organizations.
Agroprogress	Reconstruction of agro-industrial enterprises in the USSR and abroad; export and import of technologies and licenses.
Techservis	Enterprises for training about maintenance of the imported and exported agricultural machinery and equipment.

demanded may well continue to far exceed supplies at any level of prices adopted under reform. Finally, trade in foodstuffs remains entirely under State control. Any changes in consumer demand will be reflected in trade decisions only as much as government chooses.

U.S. Export Rebound To Continue

Better U.S.-USSR relations included the sale of almost 13 million tons of wheat to the Soviets under the Export Enhancement Program (EEP) at a cost of $450 million in subsidies, and negotiations for a third long-term grain agreement. The improved relations followed 1986's 13-year low in U.S. agricultural exports to the USSR. The rate of increase in the value of U.S. agricultural exports to the USSR in 1988 should surpass 1987's 43-percent rise to $938 million and exceed $1.4 billion (table 27). Behind the gain will be larger wheat shipments at higher prices and bigger soybean and soybean meal shipments. Grain and oilseed exports have accounted for 95 percent of U.S. agricultural exports to the USSR since 1970.

Table 27--U.S. agricultural trade with the USSR, by value

Commodity	1985	1986	1987 1/
	Million dollars		
Exports 2/			
Wheat	162.3	--	392.5
Corn	1,556.4	290.7	393.2
Soybeans	--	313.0	42.7
Soybean meal	--	--	57.5
Vegetable oil	27.2	--	--
Fruit, nuts, and berries	67.7	37.6	27.4
Cotton	63.6	--	--
Tallow, inedible	38.1	15.5	18.8
All other	8.2	0.7	6.0
Total	1,923.5	657.5	938.1
Imports			
Casein and mixture	0.1	0.6	0.5
Furskins	7.8	14.4	19.9
Other animal products	--	0.2	0.9
Tobacco fillers	0.1	0.5	--
All other	0.6	0.9	0.5
Total	8.6	16.6	21.9

-- = Negligible or none. 1/ Preliminary.
2/ Includes transshipments through Canada.

The U.S. value share of Soviet grain imports may rise above 30 percent for the first time since 1984 with the share of total Soviet agricultural imports over 8 percent. The share of grain imports is substantially higher than the average in the first half of the 1980's, but still well below the second half of the 1970's.

In the first quarter of 1988, U.S. agricultural exports were $764 million compared to $38 million in the first quarter of 1987. Grain exports to the USSR in the first quarter were $495 million compared to $786 million in all of 1987. On April 1, 4.2 million tons more were under contract but not shipped. Wheat exports to the USSR under the EEP in the first quarter of 1988 were 5.1 million tons, with an additional 1.9 million tons under contract, and a further 1 million tons of EEP sales in April, compared with a total of 4.8 million tons of wheat exports in calendar 1987, all EEP sales (table 28).

U.S. corn exports to the USSR continue to lag. Soviet coarse grain import requirements have fallen and more hard currency went for quality wheat imports. Exports in the first 3 months of 1988 were 2.1 million tons with another 2 million tons under contract but not shipped, compared to 5.3 million tons in all of 1987.

Table 28--U.S. agricultural trade with the USSR, by quantity

Commodity	1985	1986	1987 1/
	1,000 metric tons		
Exports 2/			
Wheat	1,068.1	--	4,847.2
Corn	13,164.9	2,671.2	5,319.9
Soybeans	--	1,518.6	221.3
Soybean meal	--	--	270.9
Vegetable oil	39.5	--	--
Almonds, shelled	28.2	12.4	7.6
Cotton, excluding linters	45.2	--	--
Tallow, inedible	80.1	50.0	54.9
Tobacco, raw	1.1	--	--
Imports			
Tea	--	0.1	--
Casein and mixture	0.1	0.3	0.3
Tobacco, unmanufactured	--	0.1	--
Beverages 3/	0.7	0.8	0.6

-- = Negligible or none. 1/ Preliminary.
2/ Includes transshipments through Canada.
3/ Excludes fruit juices. Million liters.

Figure 16

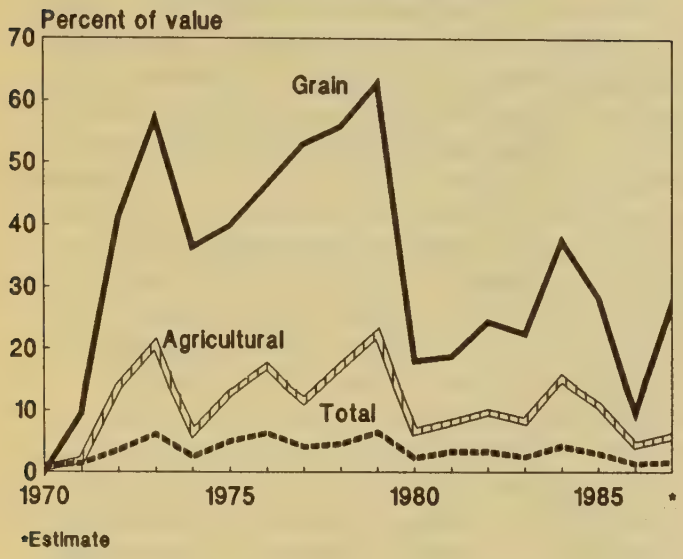
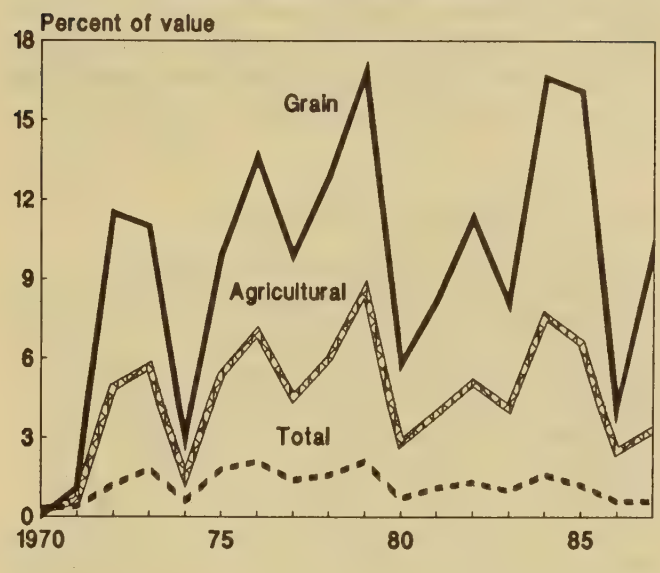


Figure 17



The volume of soybean exports in the first 3 months of 1988 was up almost 2.5 times from 1987, with another 172,000 tons of sales outstanding. The volume of soybean meal exports in the first quarter of 1988 was over 2.5 times 1987's total, with an additional 411,000 tons of outstanding sales.

Although the value of U.S. 1987 grain exports to the USSR was almost three times that in 1986, the increase did not keep pace with the almost four-fold gain in volume because of lower unit values. The lower unit values, in part, reflected the effects of EEP subsidies. The U.S. share of the value of Soviet grain imports in 1987 almost tripled to over 25 percent (figure 16). The USSR share of total U.S. grain exports on a value basis increased 2.5 times to 10 percent from 1986's 11-year low, and on a volume basis to 13 percent from 1986's 5 percent (figure 17).

Nonagricultural exports to the USSR fell 7.5 percent in 1987 (table 29). Fertilizer and fertilizer materials, which generally account for over 40 percent of the nonagricultural exports, were $229 million, down from $261 million in 1986. Various types of pressure sensitive tapes accounted for about 12 percent of 1987's nonagricultural exports and various oils another 6 percent.

Rhodium, palladium, and other precious elements and compounds accounted for over 25 percent of the $408 million of imports from the USSR in 1987: petrochemicals accounted for about 25 percent, and vodka 2 percent.

Table 29--U.S. trade with the USSR

Year	U.S. exports		U.S. imports	
	Total	Agricultural	Total	Agricultural
	Million dollars			
1972 1/	572	459	88	4
1973 1/	1,287	1,017	204	5
1974 1/	631	324	335	9
1975 1/	1,871	1,170	243	7
1976 1/	2,424	1,605	214	8
1977 1/	1,637	1,053	221	11
1978 1/	2,328	1,765	529	12
1979 2/	3,749	3,000	873	15
1980 2/	1,601	1,138	432	10
1981 2/	2,450	1,685	357	12
1982 2/	2,605	1,871	229	11
1983 2/	2,002	1,473	341	10
1984 2/	3,343	2,878	556	11
1985 2/	2,460	1,923	407	9
1986 2/	1,257	658	557	17
1987 2/ 3/	1,492	938	408	22

1/ Total and agricultural exports adjusted for grain and oilseed transshipments through Canada, West Germany, Belgium, and Netherlands. 2/ Total and agricultural exports adjusted for grain and oilseed transshipments through Canada.
3/ Preliminary.

Agricultural imports accounted for only 5 percent (almost all sable skins). As textile imports from the USSR began to increase from 1986's $45,000 to reach $5.6 million in 1987, the United States reached agreement with the Soviets on overall sales levels for 1987 and 1988.

U.S.–USSR Agricultural Exchanges

Exchanges for 1988 and 1989 were specified in a January 1988 protocol under the U.S.–USSR Agreement on Cooperation in the Field of Agriculture. The 5-year agreement, signed in 1973, provides for automatic extension for successive 5-year periods unless either party terminates the agreement. Activities under the agreement are managed by two joint working groups—one on economic research and information and one on research and technological developments. U.S. economic teams to the USSR will focus on feed and livestock production, winter and spring grains production and use, oilseed processing, the seed industry, food processing and distribution, and the pricing system. U.S. science teams to the USSR will study reforestation, integrated pest management, transfer of water, solutes, gases, and heat in soils, and compaction of soils. Soviet economic teams to the United States will focus on the structure, organization, and management of the U.S. food system, while the science teams will study nitrogen fixation and waste-free cattle and dairy product processing. *(Kathryn Zeimetz)*

USSR Top Buyer of U.S. Wheat in 1987/88

Soviet grain imports in 1988/89 (July–June) will largely depend on the 1988 grain and forage crops. The projected increase in Soviet wheat production in 1988 may cut wheat imports almost a third in 1988/89. This year's Soviet crop is unlikely to repeat 1987's poor performance which suffered above average winterkill of winter wheat and adverse weather during spring wheat harvesting. A decrease in Soviet imports of milling quality wheat in 1988/89 could be felt most by the United States, reducing exports from a record 12.3 million tons in 1987/88. The EC, however, might increase its wheat exports if the Soviets return to their 1986/87 pattern of purchasing low-priced feed quality wheat. Furthermore, expected increases in world wheat prices this year could cut the quantity demanded.

While reduced production of coarse grains in 1988 could affect Soviet activity on the feed grains market, heavy purchases of soybeans and soybean meal again in 1988/89 could keep demand for coarse grains at lower-than-average levels. Soviet coarse grain imports in 1988/89 may be unchanged from 1987/88's estimated 10 million tons, offering little optimism for Canada and Argentina who had decreased sales in 1987/88. U.S. corn sales, also, may not change from the 1987/88 level of about 4 million tons.

Export Enhancement Program

The EEP, initiated in 1985, uses Commodity Credit Corporation (CCC) surplus stocks to reimburse exporters so they can meet competitors' prices in targeted markets. The USDA specifies the country, commodity, and quantity eligible for bonus payments. Individual exporters then negotiate with foreign buyers and submit offers to USDA for bonus amounts to cover the difference between an importer's bid and the exporter's price. The total subsidy for a particular sale is calculated by multiplying the per-ton bonus by the quantity of the sale. When USDA accepts an offer, it issues the exporter payment for the subsidy in certificates which the exporter can sell on the open market or use to buy commodities from the CCC. The exporter is then free to sell these commodities.

As of March 31, 1988, total EEP wheat sales since the inception of the program equalled 36.5 million tons, and the USSR had the largest share, 31 percent, with purchases of 11.3 million tons. In April the USSR received an additional EEP offer and concluded contracts, bringing its total to 12.8 million tons. The Peoples Republic of China (PRC) ranked second, with almost 5 million tons as of March 31, and another 2 million tons offered in April. Next were Eqypt, 4.0 million tons; Algeria, 3.8 million tons; and Morocco, 3.4 million tons. Poland, Iraq, and Tunisia each received one to two million tons.

Despite the large 1987 Soviet crop, total grain imports in the 1987/1988 (July–June) marketing year are estimated the highest in 3 years. More 1987/88 imports, perhaps 20 percent above the estimated 27.5 million tons of 1986/87, are primarily the result of larger wheat purchases. Total imports in July/December 1987 were about 15 percent above the same period in 1986, reflecting large needs for milling quality wheat. Imports in the first half of 1988 were estimated up about 15 percent from the same time last year at about 21 million tons.

The estimated U.S. share of the Soviet grain market in 1987/88 rose by almost 3 times to about 50 percent of total purchases. The U.S. share—the largest in 9 years and the biggest increase since the Soviets entered the U.S. market in 1972/73—rose as U.S. competitiveness increased and export supplies fell in some competing countries. The Canadian and EC shares fell to under 20 percent from the records of about 30 percent in 1986/87. Australia's 8-percent market share in 1986/87 likely disappeared in 1987/88, while Argentina's 7-percent share was nearly halved.

New Grain Agreement Under Negotiation

In March of this year, negotiations began on a third U.S.–USSR Long-Term Grain Agreement (LTGA) to take effect on October 1, 1988. The first LTGA was for the 5-year period 1976/77–1980/81, and was later extended for two additional years. The agreement was negotiated during a time of concerns about the inflationary effects of large Soviet purchases. In 1974, the United States had imposed a moratorium on grain exports to the USSR because of deteriorating crop prospects in the United States and several other large grain trading countries and low U.S. stocks. A second moratorium was instituted in 1975 to reduce effects on the grain market of uncertainty generated by deteriorating grain production prospects in the USSR. The agreement: (1) required the Soviets to buy 6 million tons of grain, approximately divided between wheat and corn each agreement year; (2) allowed the USSR to buy an additional 2 million tons of grain without consultation; (3) provided that the maximum of 8 million tons could be raised upon consultation; and (4) had an escape clause in case of short U.S. supplies.

Concern about short supplies was not an important consideration at the time the second agreement was negotiated because U.S. stocks were high, world grain prices had fallen, and the USSR had been proven to be a large, although still volatile grain importer. Both the minimum and maximum levels were raised and the short supply clause was not included. The second LTGA, signed in August 1983, covered 1983/84–1987/88. The minimum Soviet purchase of 9 million tons, was to consist of 4 million tons of wheat and 4 million of corn. The remainder could be covered by wheat, corn, soybeans, and soybean meal (with 1 ton of soybeans or soybean meal equivalent to 2 tons of grain). The maximum for wheat and corn combined was 12 million tons. As in the first agreements, with mutual consultation the grain maximum could be raised. No maximum was set for soybeans and soybean meal.

The USSR has already fulfilled the minimum requirements for 1987/88, the fifth and last year covered by the LTGA. As of May 6, 1988, the Soviets had purchased 9.0 million tons of wheat, 4.2 million tons of corn, 831,000 tons of soybeans and a record 1.3 million tons of soybean meal.

Economic theory suggests that the United States may benefit from an agreement if it: (1) reduces variability in timing of Soviet purchases; (2) provides improved information about Soviet trading intentions; (3) increases total Soviet purchases; (4) increases the U.S. share of total world grain exports; or (5) provides the United States a price advantage. The first three benefits likely would spill over to other exporters. The economic benefits to the United States may be reduced if: (1) an agreement (or the USSR's combined agreements with various exporters) does (do) not cover the bulk of Soviet purchases, (2) the USSR does not abide by its pacts, (3) increased U.S. sales to the Soviets are offset by higher sales in traditional U.S. markets by competitors who lost out in the Soviet market; or (4) the agreement does not augment information about Soviet crop conditions and buying intentions.

If an agreement minimum (or several agreements' combined minimum) is high enough to force the USSR to stockpile in years of high production, the supplies could provide the Soviets a cushion in lean years. Higher stocks could decrease the large swings in

Table 30--USSR long-term agricultural purchase agreements

Country	Duration	Terms
United States	October 1983-September 1988	Minimum of 9 million tons of grain, including 4 million of wheat, 4 million corn, and 1 million wheat or corn or soybeans/meal (1 ton soy = 2 tons grain); 12 million ton maximum
Canada	August 1986-July 1991	25 millions tons of wheat and feed grains over the 5 years
Argentina	December 1986-November 1991	Minimum of 4 million tons of coarse grains, including 2 million tons of corn and 2 million tons sorghum; and 500,000 tons soybeans
PRC	1986-1990	As part of an overall bilateral trade protocol, 7.5 million tons of of corn and 2.6 million tons of soybeans over 5-year period
France	N/A	Trade protocol calling for purchases of wheat; details unknown
Hungary	N/A	Details unknown; formerly a 5-year trade protocol called for 500,000 tons of wheat and corn annually, not binding in event of poor harvest

annual Soviet grain imports which characterized their buying in the 1970's and the first half of the 1980's and contribute to price stability in the world grain markets. The security that agreements provide might also encourage them to allow their livestock economy to become more dependent on imported feedstuffs and to accelerate growth in domestic output.

The Soviets have had agreements which covered only about 50 percent of their annual average import requirements during 1980/81-1986/87 (table 30). Furthermore, the Soviets have not always fulfilled their grain agreements with the United States and other countries. They did not meet the terms of the U.S.-USSR LTGA in 3 of the 5 years under the current agreement. In 1984/85 and 1985/86, they bought less wheat than required, and in 1986/87 the overall 9-million ton minimum was not met. (table 31) The Soviet linkage of their refusal to buy U.S. wheat to the lack of competitive U.S. grain prices apparently limits the U.S. ability to obtain a price advantage from the agreement. The USSR-Argentine LTGA went unfulfilled for two consecutive years--1985/86 and 1986/87--as a result of shortfalls by both countries. To ensure compliance, the two sides have discussed ways to correct the large Argentine trade surplus and make the agreement more flexible in substituting farm products.

If the agreement's basic maximum were set low enough and the Soviets sought to have

Table 31--U.S. grain sales to the USSR

Year 1/	U.S. offer to sell	USSR purchases from U.S. Wheat	Corn	Total
		Million tons		
1976/77	2/ 8	3.1	3.0	6.1
1977/78	15	3.5	11.1	14.6
1978/79	17	4.0	11.5	15.5
1979/80	3/ 25	2.2	5.8	8.0
1980/81	14	3.8	5.7	9.5
1981/82	23	6.1	7.8	13.9
1982/83	23	3.0	3.2	6.2
1983/84	22	7.6	6.5	14.1
1984/85 4/	22	2.9	15.8	18.6
1985/86	22	0.2	6.8	7.0
1986/87	12	4.1	4.1	8.2
1987/88 5/	No maximum	9.0	4.2	13.2

1/ Grain agreement year-- October/September. 2/ Soviets were also told that the 1976 U.S. grain crop could meet needs in excess of this. 3/ U.S. offer later withdrawn. 4/ Total does not add due to rounding. 5/ As of May 5, 1988.

it raised in a particular year, this would be advance information about their requirements. Such information could augment the USDA's export sales and the world crop and trade reporting systems in reducing market disruptions caused by unexpectedly large purchases.

The Soviets probably view an agreement as a means to help guarantee against a future embargo. The availability of U.S. grain

through an agreement puts the USSR in a better bargaining position vis-a-vis other exporting nations. The guarantee of supplies in the United States (and to the extent other agreements offer the same assurance by other exporters) allows the USSR to transfer to its suppliers some costs for stocking against USSR shortfalls.

EEP Produces Surge in U.S. Wheat Sales to Soviets

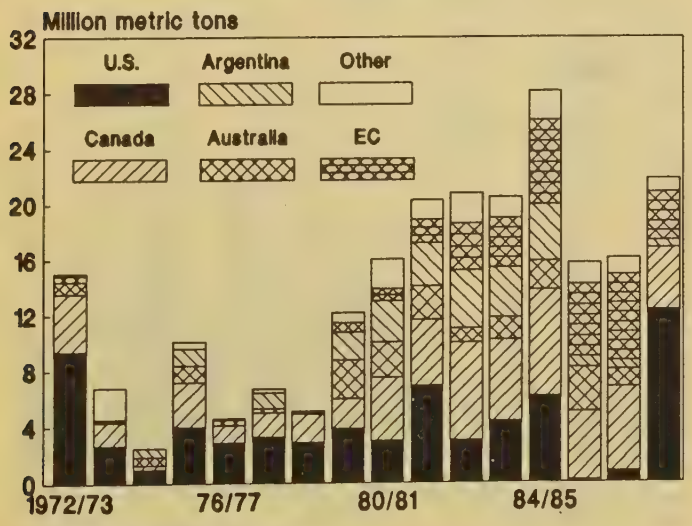
The smaller, poorer quality 1987 Soviet wheat crop and the continued availability of low-priced foreign wheat, boosted USSR imports in 1987/88 (July-June) to an estimated 22 million tons, the second highest level (figure 18). Imports of quality wheat were up markedly, comprising around 90 percent of the total. This in contrast to the above-average 25-percent share of inexpensive feed wheat imports estimated in 1986/87.

Aided by the EEP and Soviet demand for milling quality wheat, the U.S. share of the market in 1987/88 may have risen over 10 times from the 5 percent share in 1986/87, accounting for over half of total Soviet wheat purchases. In 1985/86, the U.S. share was about 1 percent. The USSR should be the top importer of U.S. wheat in 1987/88; well above Japan, Egypt and South Korea, traditionally important customers.

Much more competitive U.S. prices because of the EEP and the fall in the value of the dollar, greatly increased the

Figure 18

USSR Wheat Imports*



*Estimates for July-June

attractiveness of both new and old crop U.S. wheat. After rejecting a 4-million ton EEP offer made in August 1986, reportedly because the per-ton bonus level (originally $13, revised to $15) was not enough, the USSR accepted another 4-million ton EEP offer announced in April 1987. U.S. wheat sales under this offer, which induced the Soviets to meet the minimum wheat purchase requirement of the fourth year of the LTGA, were made at a weighted average bonus price of $41.52 per ton (table 32). In November 1987, two additional EEP offers, totalling 4.75 million tons, were announced and quickly contracted with bonuses averaging $37.33 per ton. Additional EEP offers totalling 4 million tons were announced by the USDA in January, March, and April 1988. The bonuses on the Soviet purchases under these averaged $25.56. Average monthly U.S. Gulf FOB wheat prices from April 1987 through March 1988, ranged between $106 and $132 per ton (figure 19).

The market share of Canada, the second largest Soviet supplier, likely fell from over a third in 1986/87 to less than a quarter, the lowest in 8 years. The EC's share decreased by over half, to about 15 percent in 1987/88. The increased Soviet demand for bread wheat likely contributed to the drop in EC wheat sales. The EC in recent years has been selling large quantities of feed quality wheat and had very tight supplies of quality wheat due to a poor wheat crop in 1987 and substantially reduced intervention stocks.

The EEP discounts and the devaluation of the dollar brought U.S. wheat prices in line with those of its chief competitors, who in 1985/86 substantially undercut the United States. With the unit value of U.S. wheat sold to the USSR at $80.97 per ton in calendar 1987, the United States could compete with a reported $83 per ton wheat price received by the Federal Republic of Germany in one sale. This contrasts markedly with the unit value of U.S. wheat at $151.94 per ton in 1985 versus an EC unit value of wheat sold to the USSR at $124.97 per ton. Argentina's market share fell to around 2 percent and Australia's share disappeared largely a result of its tight wheat supplies.

1987/88 Feed Grain Imports Lowest in 9 Years

Soviet imports of feed grains in 1987/88 are estimated down nearly 10 percent from

about 11 million tons a year earlier, and the lowest since 1978/79 (figure 20). A near record domestic coarse grain crop in 1987 and record protein feed imports in 1987/88 are the primary reasons for the reduction in demand. Despite the overall decline in coarse grain imports, the Soviets purchased the minimum amount of corn specified in the LTGA, enabling the United States to increase its 1986/87 one-third share. Very competitive U.S. corn prices and a lower-valued dollar benefited the United States. At a unit value of $73.92 per ton in 1987, U.S. corn was an attractive alternative to Argentine corn which sold in one instance at about $70 per ton. No country is offered corn under EEP.

Canada's share of the market likely fell by about three-quarters from its nearly 20-percent level in 1986/87. Near record barley production in the USSR in 1987 and the availability of cheaper barley in the EC, likely

Table 32--U.S. EEP wheat purchases by the USSR

Date	Amount	Type 1/	Bonus rate	Total bonus
	Tons		Dollars/ton	Dollars
1987				
May	700,000	HRW	44.14	30,898,000
May	250,000	HRW	44.14	11,035,000
May	50,000	HRW	45.08	2,254,000
May	200,000	HRW	44.40	8,880,000
May	250,000	HRW	44.40	11,100,000
May	150,000	HRW	39.99	5,998,500
May	400,000	HRW	40.27	16,108,000
May	500,000	HRW	40.19	20,095,000
May	500,000	HRW	40.19	20,095,000
May	500,000	HRW	39.63	19,815,000
May	500,000	HRW	39.63	19,815,000
Oct.	65,000	HRW	38.36	2,493,400
Nov.	500,000	HRW	30.20	15,100,000
Nov.	450,000	HRW	29.16	13,122,000
Nov.	650,000	HRW	33.57	21,820,500
Nov.	57,000	HRS	33.57	1,913,490
Nov.	50,000	HRW	35.38	1,769,000
Dec.	500,000	HRW	37.75	18,875,000
Dec.	250,000	HRW	39.89	9,972,500
Dec.	700,000	HRW	41.24	28,868,000
Dec.	100,000	HRS	41.24	4,124,000
Dec.	800	HRS	39.61	31,688
Dec.	25,000	HRS	33.66	841,500
Dec.	700,000	HRW	42.05	29,435,000
Dec.	25,000	HRS	42.05	1,051,250
Dec.	350,000	HRW	41.75	14,612,500
Dec.	50,000	HRS	41.75	2,087,500
Dec.	342,000	HRS	40.05	13,697,100
Dec.	300,000	HRW	37.10	11,130,000
1988				
Feb.	500,000	HRW	27.48	13,740,000
Feb.	500,000	HRW	28.35	14,175,000
Feb.	200,000	HRS	28.35	5,670,000
Mar.	100,000	HRS	27.00	2,700,000
Mar.	400,000	HRW	27.00	10,800,000
Mar.	475,000	HRW	21.95	10,426,250
Mar.	25,000	HRW	21.46	536,500
Apr.	440,000	HRW	19.79	8,707,600
Apr.	50,000	HRS	19.79	989,500
Apr.	200,000	HRW	21.61	4,322,000
Apr.	300,000	HRS	21.61	6,483,000
Apr.	325,000	HRW	24.70	8,027,500
Apr.	175,000	HRW	24.46	4,280,500
Total	12,804,800		2/ 34.98	447,895,778

1/ HRW is Hard Red Winter Wheat and HRS is Hard Red Spring Wheat. 2/ Weighted average.

Figure 19

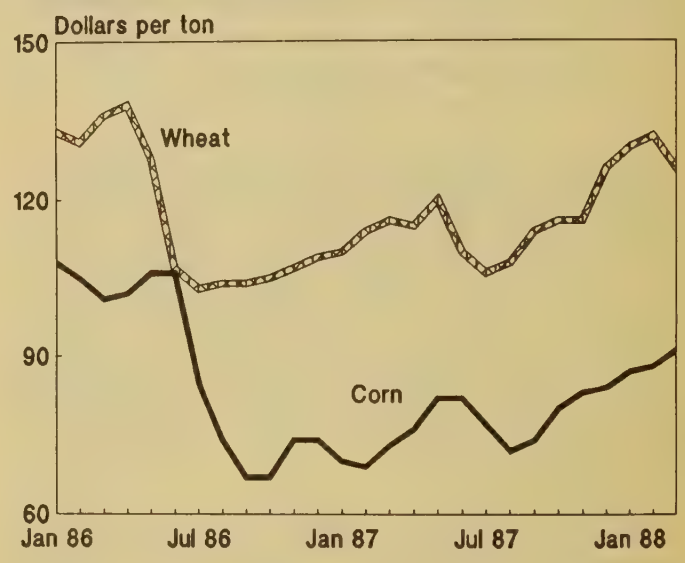
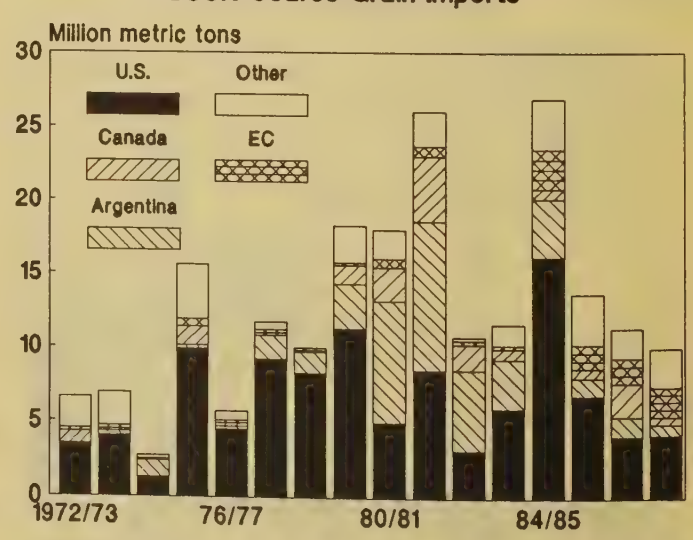


Figure 20



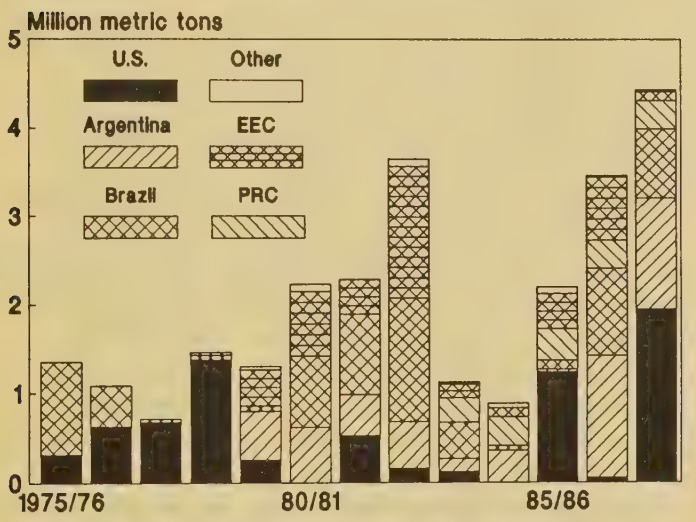
*Estimates for July-June

accounted for part of the reduction in Soviet purchases from Canada. With large and low-priced barley supplies on hand, the EC increased its share of the coarse grain market to a record high of about 20 percent. Argentina and the PRC both have agreements to provide the Soviets with corn. Argentina's share fell about half from 1986/87's 12 percent and the PRC likely increased its 15 percent share. *(Christian J. Foster)*

U.S. Soybean Meal Exports Surge in 1987/88

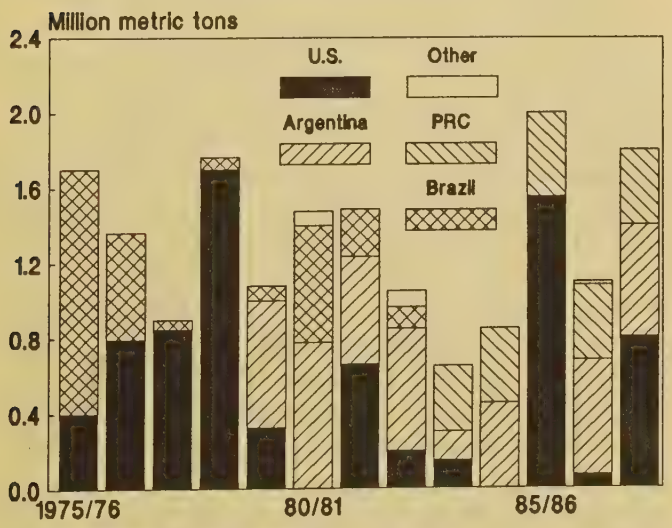
Combined Soviet imports of soybeans and soybean meal (in soybean meal equivalent) are expected to reach record levels in marketing year (October–September) 1987/88, reflecting continued emphasis on the chronic protein shortage in animal feeds (figure 21). The USSR is expected to continue priority on soybean and meal imports into 1988/89 and the near future. The United States appears to be the prime beneficiary in 1987/88 of the Soviets increased purchases of oilseed and oilseed meals and is likely to maintain a large share in 1988/89.

Figure 21
USSR Soybean and Soybean Meal Imports*



*Soybean meal equivalent; estimates for October-September

Figure 22
USSR Soybean Imports*



*Estimates for October-September

The Soviet strategy to offset the protein deficit by increasing imports should raise the efficiency of the livestock sector and quickly improve per capita availability of meat products. (Soviet per capita meat consumption is slightly above half the U.S. level.) Furthermore, the Soviets likely view a rise in meat supplies as an incentive to workers to commit themselves to Gorbachev's reforms and as a clear sign of the success of the reforms.

Despite the good 1987 oilseed crop, Soviet soybean imports in 1987/88 are expected to top 1986/87, although remaining below the record 2 million tons purchased in 1985/86 (figure 22). U.S. soybean exports could increase more than twelve times in 1987/88, with the share of the market climbing from just over 5 percent last year to about 45 percent (table 33). The remainder of the

Table 33--U.S. soybean and soybean meal exports to the USSR 1/

Year	Soybeans	Soybean meal 2/
	1,000 tons	
1976/77	889	--
1977/78	805	--
1978/79	1,187	34
1979/80	807	--
1980/81	--	--
1981/82	710	--
1982/83	199	--
1983/84	416	--
1984/85	--	--
1985/86	1,519	--
1986/87	68	--
1987/88 3/	831	1,635

1/ October-September marketing year. 2/ In soybean equivalent (44 percent protein). Conversion factor to meal is .795. 3/ As of April 28, 1988 this includes 232,000 tons (soybean equivalent) outstanding meal sales.

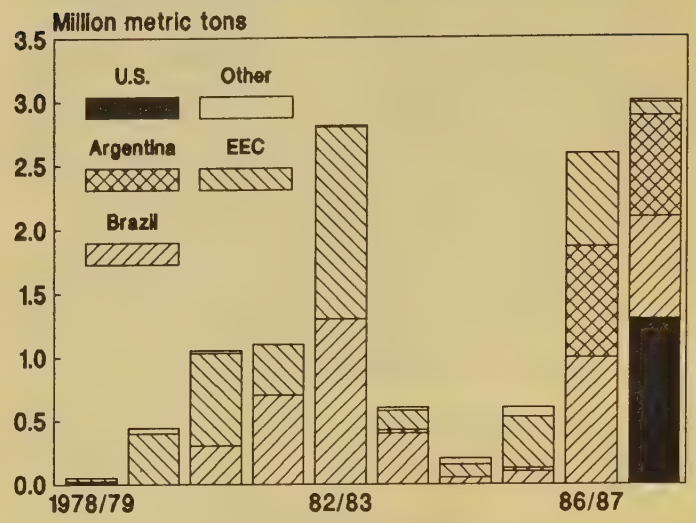
market is likely to be split among Argentina, the PRC, and Brazil. Argentina and the PRC maintain long-term supply agreements with the USSR and are expected to provide volumes similar to 1986/87, but their shares will be lower. Although Brazil's agreement lapsed in 1986, the country's good 1988 soybean crop could mean gaining a part of the Soviet market this year, the first time since 1982/83.

Soviet soybean meal imports are expected to increase even further in 1987/88, topping the estimated record 2.6 million tons purchased in 1986/87 (figure 23). The United States, which had not sold soybean meal to the USSR since a mere 27,000 tons in 1978/79, could make up about 40 percent of imports in 1987/88. The dramatic increase in the U.S. share of the Soviet soybean meal market contrasts with the declines for the other primary suppliers--Argentina, Brazil and the EC--who should have adequate supplies available this year. A decline in the EC share could cut its imports of U.S. soybeans, usually the main source of soybeans for crush. While the shares of Argentina and Brazil could decline 25 percent in 1987/88 from the one-third share of each in 1986/87, the EC's share of the market may fall by over 75 percent, about 785,000 tons in soybean equivalents.

Pricing, political, and shipping factors probably are part of the Soviet rationale for turning to the U.S. market this year. The devalued dollar and the relative rise in EC currencies may have aided U.S. sales. Secondly, the improved U.S.-USSR political climate, which extended to the agricultural area with EEP sales and negotiations for a new LTGA, likely contributed to increased purchases. Another factor could have been the opportunity U.S. meal offers in broadening the schedule of shipments. A willingness on the part of U.S. companies to pelletize meal and to make other adjustments for the Soviets could facilitate additional sales in the future. Nearly all the meal that the Soviets import from Argentina and Brazil is pelletized. The pellets are easier to handle and store and more resistant to spoilage. These are important characteristics for commodities that must move through the poor Soviet transport system to farm storage facilities not designed for soybean meal requirements.

Figure 23

USSR Soybean Meal Imports*



*Estimates for October-September

Soviet imports of vegetable oil could fall as much as a third in 1987/88, to the lowest level since 1979/80, because of increased 1987/88 oilseed imports, a larger domestic oilseed crop in 1987, and large 1986/87 oil imports. The bulk of Soviet imports consist of soybean and sunflowerseed oil from South America and palm oil from Malaysia. Linseed, olive, and coconut oil largely account for the remainder of Soviet imports. The United States has not sold vegetable oil to the USSR since a 39,500-ton sale of soybean oil in 1984/85. The USSR, which remains about 3 kilograms below its 13.2 goal for per capita vegetable oil consumption, is expected to be a net vegetable oil importer for at least the near term. *(Christian J. Foster)*

Livestock Imports May Increase in 1988

In 1987, the dollar value of Soviet livestock imports probably increased slightly from the previous year's $2.15 billion, mostly because of the increase in the ruble-dollar exchange rate to $1.56 per ruble in 1987 from $1.42 in 1986. Livestock trade in ruble terms may have actually declined. About half of the value of Soviet livestock imports are accounted for by bilateral trade arrangements with other socialist countries (table 34). The other half comes primarily from Western Europe and Oceania. In trade with the West, the Soviets continue to bargain for cut-rate prices on low-quality commodities. The major exception is wool.

Table 34--Major suppliers of selected agricultural goods to the USSR in 1986

Commodity	Quantity	Supplier and share
	1,000 metric tons	(Percent)
Grain and products 1/ 3/	27,546	Canada (27), EC (18), United States (15), Australia (12), China (8), Hungary (4), Argentina (2), and others (14).
Sugar 2/	4,768	Cuba (74), Brazil (11), Thailand (6), Australia (3), and others (6).
Fresh/frozen red meat	586	Romania (25), Hungary (16), France (13), Ireland (8), Mongolia (7), New Zealand (3), Finland (2), and others (26).
Poultry	175	Hungary (57), Romania (19), France (13), Bulgaria (7), and others (4).
Wool, scoured	115	Australia (49), New Zealand (23), Argentina (12), Mongolia (6), Uruguay (7), Afghanistan (1), and Syria (1).
Soybeans	2,012	United States (77) and China (22).
Soybean meal 3/	200	Argentina (83) and others (17).
Fresh fruit and berries	1,269	Hungary (24), Poland (18), Cuba (15), Bulgaria (7), Egypt (6), Greece (6), Morocco (6), China (6), Turkey (3), and others (9).
Dried fruit	91	Afghanistan (47), Turkey (15), Yugoslavia (14), Romania (13), and others (11)
Fresh vegetables	271	Bulgaria (32), Poland (23), Romania (15), Vietnam (8), Egypt (4), and others (18).
Cotton lint	88	China (53), Syria (16), Sudan (16), Egypt (13), and Afghanistan (2)

1/ Grain includes all major grains, rice, and flour in wheat equivalent at 72 percent. 2/ Total Soviet sugar imports in terms of refined value converted at 0.92. 3/ Estimate.

The most important Soviet livestock product import is meat. Despite respectable increases in domestic meat production in the last few years, Soviet meat imports have actually increased since 1984 and are approaching 1 million tons per year. About 70 percent is imported from socialist countries, primarily Hungary, Romania, and the PRC. Imports of fresh/frozen red meat and poultry from the West have been priced roughly between $800 and $900 per ton. France is the most important Western supplier.

The USSR imported 300,000 tons of old butter from the EC in 1987 at bargain prices of less than $300 per ton. In contrast, the unit value for U.S. exports of butter and anhydrous milkfat in 1987 was over $1,000 per ton. Assuming the Soviets can effectively utilize such old butter, interest in similar deals will continue. With excess demand for meat still large in the USSR, and the importance attached by Gorbachev to increasing food supplies, interest in livestock imports will remain strong this year and next. However, limitations on hard currency will restrain trade.

Expense has not been spared for imports of wool and breeding stock. Wool production has low priority compared with other livestock output in the Soviet Union and policymakers appear willing to continue large and costly imports, three-fourths of which come from Australia and New Zealand. Imported breeding stock remains a high priority, particularly for dairy cattle. Crossing domestic breeds with imported stock has steadily helped to raise Soviet milk yields since 1982.

Tallow is the primary U.S. animal product exported to the USSR, although sales have included hides (635,000 pieces in 1983-85) and poultry meat (8,576 tons in 1976-77). Tallow exports have ranged from 40,000 to 100,000 tons annually since 1978. In March 1988, the United States and the USSR reached agreement relaxing Soviet regulation on imported breeding cattle, bovine semem, and bovine embryos. For instance, the USSR agreed to accept brucellosis-vaccinated cattle. *(Edward Cook)*

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